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## CONTENTS FOR JANUARY, 1898.

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|  |    |
|--|----|
| CONSTRUCTION OF CROWN AND BRIDGE WORK .....  | 1  |
| LEADING QUESTIONS AND ANSWERS (THIRTY-SECOND PAPER) .....  | 8  |
| TROUBLESOME CASES.....   | 12 |
| BRASS ARTICULATORS <i>vs.</i> ALL-PLASTER ARTICULATING MODELS .....  | 14 |
| HOW TO PURIFY WAX AND HOW TO MAKE BASE-PLATE WAX.....  | 15 |
| OXYCHLORIDE OF ZINC CEMENT .....   | 16 |
| A RIGHT-HAND GLOVE.....  | 17 |
| MAKING DENTAL ALLOYS AND CEMENTS .....   | 17 |
| ARTICULATING TEETH .....   | 20 |
| IMPRESSIONS OF MODELING COMPOSITION .....  | 22 |
| TOOTH DISCOLORATION FROM ARSENICAL PREPARATIONS.....   | 22 |
| THE LIBBY METHOD .....   | 23 |
| THE AMALGAM QUESTION .....   | 23 |
| NITROUS OXIDE GAS.....   | 24 |
| BOOK NOTICES .....   | 25 |
| OBITUARY NOTICE .....  | 26 |
| PRACTICAL PLACE.....   | 20 |
| A New Cleansing Fluid—To Harden Rubber—Infiltration Anæsthesia—<br>Massage—Laboratory Hints—Articulating Teeth, etc. |    |

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# THE Dental Office and Laboratory.

FOURTH SERIES.

VOL. XII.

PHILADELPHIA, JANUARY, 1898.

No. 1

## THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

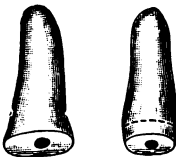
[THIRD PAPER.]

In our two former papers we described the construction of the *Face plate* and the *Collar crown*. We propose in this to describe the construction of the *Ferrule or Richmond Crown*. The root end to which the ferrule is to be fitted is first prepared. Should there be much of the crown standing, as shown by Fig. 39, it would not be well to attempt the removal of the remains of the crown by cutting it off with the excising forceps, for by so doing there is a risk of splitting the root; but the crown should be removed by cutting it with a small, thin, corundum disk, in the direction indicated by the mark A. The root is still farther reduced almost to the level of the gum by means of stump corundum or carborundum wheels. After the stump wheels have been used on the face of the root, the root is made level by means of the facers, Fig. 40.



FIG. 39.

The facers will leave the root very much in the condition shown by Fig. 41. In this condition it would be impossible to accurately fit a ferrule, so that the flaring edges must be reduced to parallel sides like Fig. 42. Various devices have been suggested, and put on the market by manufacturers, to accomplish this. The enamel remaining on the root end is peeled off. This is sometimes quite difficult to do. The enamel is crushed by means of

FIG. 41. FIG. 42. *glass-hard steel instruments* some-

what in shape like Fig. 43. The enamel is crushed or powdered, and the root end, above the gum, is rendered parallel by means of German dentated enamel fissure burs, or so-called "cross-cut burs." Other

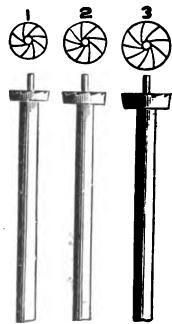


FIG. 40.

instruments for accomplishing this have been suggested by Dr. Starr, Dr. Chase, Dr. Weinich, Dr. Howe, Dr. Mitchel and Dr. Sweeny. With Dr. Sweeny's device, which is illustrated by Fig. 45, the flaring part

▷

of the root may be cut down by inserting one of the German dentated enamel burs into the nose of the hand-piece, placing the points into the hole in the root, and gradually reducing the root end, as shown by Fig. 42. The band is then fitted by twisting a wire around the root with a dentimeter, removing this, laying the measure on the end of a piece of wood, as shown by Fig. 46, driving it into the wood, and then cutting down the wood to the mark indicated by the wire measure. This plan will materially aid in accurately fitting the band. The band should be but a trifle wider than the thirty-second of an inch. In making these bands for encircling the roots, it is well that the lapped ends be chamfered, so that the double or lap may not be thicker than the rest of the band. The lap need not be more than the thirty-second of an inch. The best way to chamfer the ends of the band is to



FIG. 43. lay the ends on the face of the bench anvil and attenuate them by hammering, as shown

by Fig. 47. Done in this way, the ends are chamfered more regularly than if done by filing. The bands are preferably made of seamless tubing, which can be procured of any size. The width may be obtained by sawing the seamless bands with a fine saw, in the Mechanical Saw Frame, Fig. 36, of September number, 1897. In order to do this sawing accurately, so that one part of the band may not be wider than the other, a pair of dividers are used; one point of the dividers resting on the edge of the seamless tube, while the other scratches the tube around its entire circumference, indicating where the tube is to be sawed. This is shown by Fig. 48. If, however, the dentist is provided with a turning lathe, the tube may be secured in the drill chuck, and the band may be sawed, while revolving

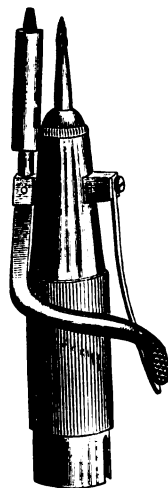


FIG. 45.



FIG. 46.

the lathe, and very accurately. The band being constructed and fitted, it is placed on a piece of plate and soldered to it, in this way forming a cap or cover

FIG. 47

to place over the root end. When thus constructed, the surplus plate is cut and filed away even to the edges of the band.

Most devices simply prepare the root end, and while they may accomplish this well or indifferently, the operator is obliged afterwards to fit the ferrule to the root. This is accomplished only after numberless trials, being painful to the patients in trying the fit, while in these trials the fingers and ferrule are unavoidably covered with blood, making the operation disagreeable and unsatisfactory. With Dr. Hovestadt's system, none of these drawbacks hamper the operator or disturb the patient. By a series of trephines, each smaller than the other, the root end is so reduced that the little seamless caps and ferrules, made mathematically the same size as the trephines, fit over the end of the root, reducing not only the pain, but the time, the blood flow, and all the other disagreements of the ferrule crown system.

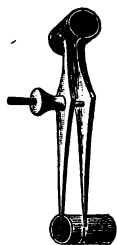


FIG. 48.

When the root end has been brought down to the level with the gum, it is then made level with the facers (Fig. 40), after which a trephine is used, shown by Fig. 49. In using the trephine, one should be selected that will just take the least shaving from the circumference of the root, leaving a little shoulder beneath the free margin of the gum, as shown by Fig. 50. This will, to a great extent, conceal the band. The root canal should not be enlarged or changed in shape at the orifice. It should be made circular, and only sufficiently large to admit the pivot end of the trephine, as



FIG. 49.



FIG. 50.

in Fig. 51. If the hole in the root end is cut oval, as shown by Fig. 52, the end of the trephine could not be held steady, and the trephine *would not cut true*. It is preferable to use the trephines *by hand*, rather than in the hand-piece of the engine, although there are provisions for using them by either means.

The root end being thus far prepared, the canal may now be reamed out to its full depth. For this purpose, it is well to *proceed slowly*, removing all debris by means of a fine probe, as it accumulates under the cutting tool. As much depth as can be should be obtained. In cuspid roots fully a half inch; in central and lateral incisors from a quarter to three eighths of an inch.



FIG. 51:



FIG. 52.

The greater the depth, the stronger the crown; yet in doing this, judgment must be exercised, as it would be much better to have less depth than run the risk of perforating the root at the foramen. By using the probe intermittantly, the full depth of the root may be secured without the danger of perforation. The root canal should be made slightly conical, as is shown in Fig. 50. For this purpose there are a number of instruments on the market, some devised by Dr. Ottolengui and Dr. Peso for this purpose. These conical reamers should not be used until the full depth of the root is secured, as they are intended only to enlarge, not to drill. A pivot is next filed conical (preferably by securing the wire in the chuck of the lathe) and fitted accurately into the root. The hole in root end is now countersunk with a large round bur. The cap is then placed on the root end, and the face of the cap is depressed into this countersink by pressing a ball burnisher on to it at this point. This will not only indicate *exactly* where the face of the cap is to be pierced for the dowel or pivot that is to pass into the root, but serves as a little cup where the solder unites the cap to the pivot, materially strengthening this foundation for the porcelain facing; and especially so should it be necessary to file off flush the protruding end of the pivot. An impression is now taken in plaster with the cap and pivot in position, the protruding end of the pivot serving to engage the plaster, so that it may be brought away *in the impression*. Before filling the impression with plaster, it is well to *nearly fill the cap with wax*. If this be not done, in endeavoring to remove the cap from the plaster model, the chances are that the plaster, which would have filled the cap, will be fractured, and thus the cap and pivot could not be replaced *in exactly* the same position which it occupied in the mouth; but by *nearly filling it with wax*, sufficient of the band of the cap will be indicated on the plaster model, as to enable the workman to replace it in exactly the same position which it occupied in the mouth.

The porcelain facing is then backed either with gold or platinum—we prefer the latter, as it can be made to fit closer to the back of the tooth. If the backing touch the protruding end of the dowel this may be cut off close to the cap, or filed away laterally to give room for the backing. The porcelain facing is then ground to fit very accurately against the cap. It may then be united with adhesive wax and tried on the root in the mouth, and if all be correct removed, invested and soldered.

In grinding these porcelain facings it will sometimes happen that

they will be too wide near the cap and will overhang. This may be corrected, *after soldering*, by grinding away the overhanging part and *polishing the porcelain* with the polishing wheel (Fig. 53), made for this purpose. To accomplish this well the lathe should be driven at a high rate of speed.

The finished crown is shown by Fig. 54.

If the display of gold be objectionable, this may be concealed by using a platinum cap and dowel and a platinum

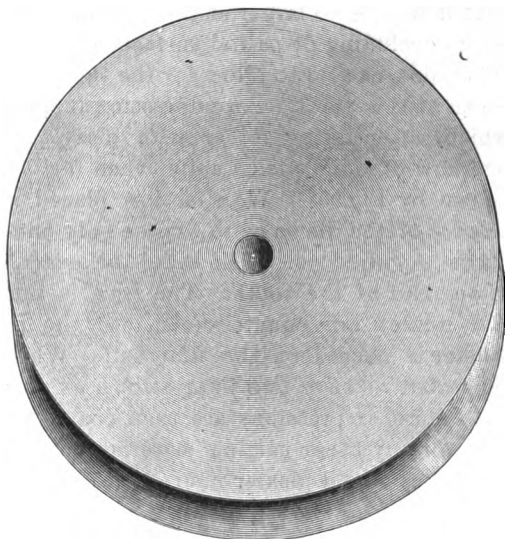


FIG. 53.

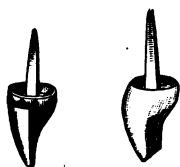


FIG. 54. FIG. 55.

backing, and soldering the dowel to the cap with *pure gold*, and fusing tooth-body over the front of the band, as well as using this to hold the tooth to the cap, instead of solder, as is shown by Fig. 55. This, of course, could only be done when the dentist

is provided with one of the small furnaces used for crown and bridge work. This, we believe, is all the detail used in the construction of the "Ferrule or Richmond crown."

"All gold crowns" are rarely used on any of the six oval teeth, as the display of gold is too glaring for the taste of the majority. They are, however, frequently used over the bicuspids and molars *separately*, or as buttresses, for the support of the intervening teeth (the intervening teeth being called "dummies"), or in bridge work, as shown by Fig. 56. Sometimes, however, it is necessary to construct all gold crowns over the eye teeth to support the four lost incisors, cutting away the outer part of such crowns in order to conceal, as much as possible, the too great a display of gold, and making, what is termed, an open-faced or window crown. Such crowns may be constructed in several ways, which we

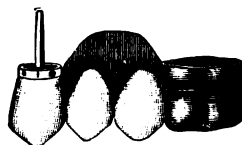


FIG. 56.

will describe: The first procedure will be to dress down the tooth so that it will be no larger at the cutting edge than at the neck, as also on its occluding or palatal surface, should the lower teeth strike it at this point, as also to allow for the thickness of gold which covers the tooth at this point. An impression in plaster of-Paris is then taken, which, after luting either with plaster or mouldine, to avoid the overflow of metal, yields a die, when fusible alloy is poured into it, as shown by Fig. 57. Wax is now placed around the entire circumference of the die so as to expose only one-half of it, when plaster-of-Paris is poured on. This takes the exact impression of one-half of the tooth. The wax is then removed, and guides are countersunk into the plaster, and plaster is poured on the first half. When these are separated we have two impressions, as shown by Fig. 58. These impressions are then coated with etherial soap, or any other parting material, paper is wrapped around each and plaster poured into each, thus giving the reverse, as shown by Fig. 59. When these four impressions have been thus obtained, paper is closely wrapped around each and fusible alloy poured into each, thus giving the workman a die and counter-die of each surface of the tooth. With these dies gold may be stamped up sharply into two halves, and the halves soldered together so as to form the crown. After soldering, the outer part of the crown is ground away by means of small corundum wheels in the lathe, while the crown is held on the die, in order not to

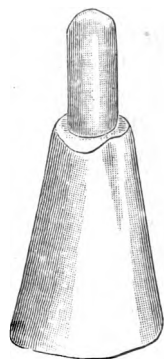


FIG. 57.

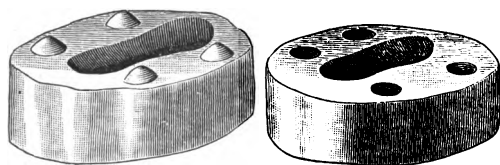


FIG. 58.

bend it, and in order to form the "open faced crown." The manipulation is attended with considerable detail and trouble, and the result not commensurate, as we have not found an open-

faced crown thus constructed to be as strong as one constructed in another way, although we must say that the fit is perfect.

Another plan is to obtain a die, as shown by Fig. 57. Make a ferrule of gold, leaving it about one-eighth of an inch higher than the die; drive this ferrule on the die by placing a flat piece of steel on it (so as not to mar the edges), as shown by Fig. 60, and then, by careful hammering, burnishing and snipping at different points, the top part of the ferrule

may be brought in to make a pretty accurate fit against the labial and palatal faces of the tooth. The driving on of this ferrule will also

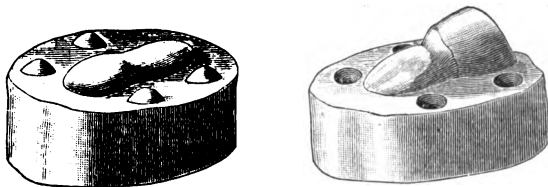


FIG. 59.

indicate very accurately where the ferrule is to be filed, in order to fit it to the gum festoon. This forms a much stronger open-faced crown, with much less trouble, and subserving the purpose equally well if not better than the other plan.

Still another plan has been suggested by Dr. Evans. A graduated series of dies are made from models and cast in zinc. These are laid on the moulding table and lead poured on so as to make counter-dies, which will be no deeper than A, Fig. 61. The gold for the crown is first cut to a circular piece, annealed and placed in the counter-die of No. 1. The die is brought against it and a concave disk is produced without wrinkles. It is again annealed and driven

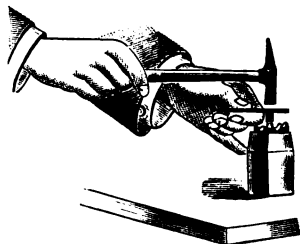


FIG. 60.

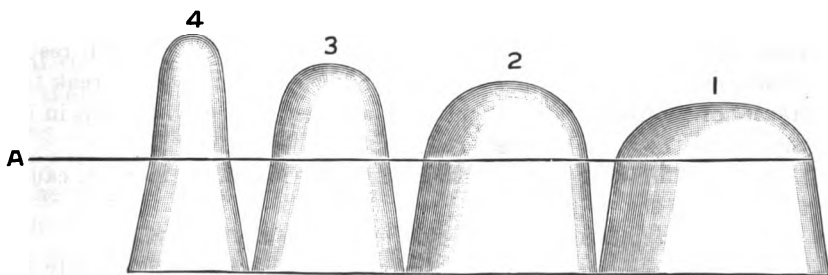


FIG. 61.

into No. 2, and so on until a hollow cone is produced like No. 4. A counter-die is then made on a die like Fig. 57, when the cone of metal may be gradually driven up to an accurate fit.

[TO BE CONTINUED.]

## [THIRTY-SECOND PAPER.]

## LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

BY THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

Q. Is the destruction of the life of the pulp due entirely to dental caries laying bare this organ?

A. By no means.

Q. To what other cause or causes is it due?

A. The life of the pulp is very slight, due only to the minute connection with other nerves and vessels at the foramen in the root, and a trifling disturbance at this point, by a blow, or by the too sudden or continuous force exerted by regulating appliances, would be sufficient to destroy its vitality.

Q. How do these circumstances act in causing its death?

A. By cutting off its sources of nourishment.

Q. Can you mention other causes which may lead to the death of the pulp?

A. The persistent use of the sandpaper disk in polishing fillings, the violent use of the separator in moving teeth in order to obtain room for filling them, the hammering in of wedges to keep teeth steady, while filling them may be instanced as some of the other causes which may lead to the death of the pulp.

Q. But is not the peridental membrane sufficiently elastic to admit of the movement of teeth without causing such results?

A. The peridental membrane is elastic to a certain degree, yet we know that a sudden force, or a pressure beyond this limit, will result disastrously: witness the sudden starting of a horse will break the traces, or the too great stretching of an elastic band will result in its rupture.

Q. How do these forces, acting on the peridental membrane, cause the death of the pulp?

A. By strangulating the vessels at the apex of the tooth.

Q. Does the tooth give any sign of devitalization immediately on the death of the pulp?

A. The tooth does not give immediate sign, but discoloration will ensue after a time, showing that this result was brought about by one or other of the causes we have mentioned. At other times congestion may promptly set in, and the tooth discolors rapidly.

Q. Is the death of the pulp from the causes you have mentioned confined to any time of life?

A. It is not, for accidents may occur at all times, as, for instance, a blow or a fall; yet we most frequently notice these sequences in childhood, when by playing, running, wrestling, etc., a fall or a blow may cause the death of the pulp; then again the regulating of the teeth is most frequently done in childhood or youth; hence, if the pulp be killed by the too rough usage of the appliances employed to effect the movement of the teeth, it may be traced to this, at this time of life.

Q. When the pulp is thus killed, does it result in pain?

A. It does not always result in pain, but it always results in discoloration. It may result in pain when congestion ensues from its death.

Q. What becomes of the pulp when killed by this strangulation of the vessels at the apex of the root?

A. The organ decomposes or becomes mummified, and this septic matter is gradually absorbed by the dentine of the tooth, to which is due its discoloration.

Q. Do these dead or discolored teeth give trouble?

A. Such teeth are known to remain comfortable for years without giving the least discomfort.

Q. Can their color be restored?

A. To a great extent this can be done.

Q. How?

A. By entering the pulp chamber and root canal, cleansing thoroughly, and using liberally 25 per cent. etherial pyrozone, which, by its large supply of oxygen, burns up all septic matter in the dentinal tubuli, and restores to a very great extent the normal color of the tooth.

Q. What do you understand by gangrene of the pulp?

A. It is a term used to denote the condition of the pulp when it is in the greatest stage of decomposition.

Q. What generally ensues when the pulp is in this condition?

A. Inflammation.

Q. What produces this mortification of the pulp?

A. It is produced either by the exposure of the organ by the progress of caries, or by the too sudden application of force.

Q. When the pulp dies and is confined within the contracted chamber of the tooth, does it always result in pain?

A. A pulp thus circumstanced does not always give pain, provided there be an outlet for the product of this decomposition. Pain ensues

when from any cause this outlet becomes choked or stopped, whereby the egress is hindered.

Q. What is the product of this decomposition?

A. Generally pus or gas—sulphuretted hydrogen, a foul odor.

Q. How is periostitis produced?

A. When from any cause the aperture leading to a gangrenous pulp becomes closed, the irritation set up by the septic matter, on account of the pressure, becomes so excessive that the pericementum is involved and periostitis is the result.

Q. How may relief be given in such cases?

A. By removing the obstruction whereby the pus or gas may escape or find a vent.

Q. What produces a mummified condition of the pulp?

A. This condition may be produced when the pulp dies from the effect of the strangulation of the vessels at the apex of the root, or from capping an exposed or nearly exposed pulp with oxychloride of zinc.

Q. Were the efforts to allay the irritation caused by the impaction of food in the cavity of decay in a tooth, or of the capping of the exposed pulp generally successful?

A. They were not, for reason that the cause of the irritation in the first case was not well understood, and the absence of proper materials were not at hand in the second.

Q. When may we date any advance in the treatment of the pulp?

A. Not until after the introduction of arsenic by Spooner in 1836 for the devitalization of the pulp.

Q. What modes of practice are now pursued in the treatment of this organ?

A. Capping the pulp and devitalizing it.

Q. What was the theory advanced in favor of capping the pulp?

A. It was thought that if the pulp could be protected from pressure by an intervening material it might still retain its normal functions.

Q. Was this borne out by successful operations of this nature?

A. The theory seemed feasible; but at the time of these operations it was not taken into consideration that from the moment of actual exposure the pulp was in a greater or lesser pathological condition, and this condition would continue unless means were taken to restore it to health, hence, the capping operation generally proved unsuccessful.

Q. How were the first operations of capping the pulp performed?

A. Small circular disks of gold or lead were cut of sufficient size and made concave, the outer circumference resting on the solid dentine adjacent to the exposure. Gold was used by some, as it offered more rigidity, while lead was preferred by others on account of its poorer thermal property. The remainder of the cavity was filled with gold—an operation, under the circumstances, very uncertain in its results and very difficult of performance.

Q. Were any of these operations successful?

A. Despite the difficulty of these operations, some have been recorded successful, but they were noticed only in persons of healthy and strong recuperative organisms.

Q. Did the operation find many adherents?

A. At first it did; but the large number of failures caused it in a great measure to be abandoned. But some continued to have an abiding faith in the operation, and imagined that the cause of the failures was due more to the incompatibility of the metal than to the theory. Small disks of ivory quill, gold-beaters' skin, court plaster, tissue paper, etc., etc., were used to lay over the point of exposure, saturated with the balsam of fir to hold them in place, and the remainder of the cavity carefully filled without pressure on the point of exposure, with the hope that secondary dentine would form, and Nature thus aided by Art would result in success. But these hopes were not realized. Better results were accomplished after the introduction of the oxychloride and oxyphosphate of zinc, yet even with these the operation remains unreliable.

Q. It would appear that as either of these materials could be laid over the exposed pulp so gently, and allowed there to solidify, that the operation ought to be successful?

A. This was the supposition; but the nature of the pulp is so delicate, and it is endowed with such exalted sensibility, that it will not tolerate any material next to it. When we consider that the anæmic condition, the scrofulous and syphilitic diathesis all operate against the success of capping pulps, we can readily account for the few cases of successful capping.

Q. What should be done as an initiatory proceeding?

A. If the pulp be found only recently exposed, and the indications point to only slight inflammation, a sedative should be used in the cavity. The oil of cloves, or cinnamon, or the oil of cajiput, may be used to gently bathe the exposure, or a weak solution of carbolic acid may be used successfully at this time.

Q. What has proved the most successful capping material?

A. The oxychloride of zinc.

Q. Can you give a reason for this?

A. This material preserves the superficial dentine; and should the pulp die beneath, the death results in a dry gangrene which seldom gives rise to pain.

Q. How is this known?

A. Experience has demonstrated this; for on removing these fillings and opening into the pulp chamber, this mummified or dry condition of the pulp has been revealed.

Q. The use of this material is accompanied with considerable pain; why should not the oxyphosphate, which causes no pain, be used in preference?

A. The oxychloride of zinc causes pain from its escherotic property, but it has deep penetrating and preservative properties, and from these therapeutic qualities it is indicated as a pulp capping over the oxyphosphate.

Q. Has any other treatment been suggested?

A. Dr. Coleman proposes to cap an exposed pulp as follows: As much of the loose decayed dentine as may be removed painlessly is removed, and the cavity prepared for the reception of the filling, the cavity being flooded with carbolic acid to mitigate the pain. This is then absorbed away, when a small disk of cardboard, a little larger than the point of exposure, thoroughly saturated with nitric acid, is laid on the exposed point gently, and retained for a short time. This gives a sharp pain like toothache, but is never very severe or long continued. This disk is then removed, and another moistened with carbolic acid takes its place. The pulp is preserved from pressure by placing a concave metal disk over the paper when the filling may be completed. When such cases are to be completed with amalgam, he advises that a thin coating be given over the metal disk with oxychloride.

[TO BE CONTINUED.]

### TRoublesome Cases.

By THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

As we have frequently had cases of the kind, such as we propose to describe, and presume other operators have had the same, we venture to offer our mode of procedure, with the hope of aiding those to overcome the difficulties we had to surmount.

The case in question was one of the exposure of the nerve in the

first right upper bicuspid, which was excessively decayed on its distomasticating surface. The cavity of decay was filled with hypertrophied gum, besides quite a large pedicle or opercula of the same morbid and hypertrophied condition lying loose and flaccid on the buccal surface of the tooth, nearly obliterating a view of the tooth.

There was an excessive flow of blood at the slightest touch to the gums, which so filled the mouth as to conceal not only the tooth in question, but several teeth anterior and posterior to it. There was no possibility, in this condition, to make a devitalizing application.

Our first effort was to snip off with the curved blade scissors the pedicle of gum. Next we essayed to check the bleeding, first with hot water, and successively with perchloride of iron, carbolic acid cautery, and afterwards with trichloroacetic acid, but these had but slight effect; there was a constant oozing of blood.

The cavity of decay was still filled with the hypertrophied gum. We could not use force to create an absorption of this, because of the exposure of the nerve, so that we had to proceed slowly.

We mixed equal parts of the acetate of morphia and powdered hydrochlorate of cocaine (about as much of each as would lie on the end of the small blade of a penknife), with a drop of carbolic acid, and essayed to insinuate this paste in contact with the exposure beneath the gum tissue, which filled the cavity, after which we secured this from escape into the mouth with a small pellet of cotton.

At the next visit we found the gum slightly absorbed, so that we continued the same treatment, using a little larger pellet of cotton.

After two efforts more we could see the exposure, the gum having been cleaned from the cavity.

Applying the dam, we now were able to make the application of arsenic, the formula of which, by the way, we will give, as it has yielded to us remarkably successful results. Taking as much of the acetate of morphia as will lay on the end of the small blade of our penknife, with an equal quantity of the powdered hydrochlorate of cocaine and of powdered arsenic, we mix these on a glass slab, with the spatula, and by incorporating them with carbolic acid form a paste.

The nerve dies, or is killed by this application as quietly and as painlessly as an infant dropping to sleep, and this in *twenty-four hours*.

This application was made directly to the point of exposure and *slightly pricked in*, which was evidenced by the flinching of the patient.

The paste was secured in position by a small wad of cotton, and the cavity filled over this with a larger wad, using the precaution to pack this larger wad towards the second bicuspid, so as to avoid all pressure against the exposed nerve.

When the case next presented, the nerve was found to be dead; but the gum at the cervical margins still remained tough and unyielding, so that it would have been impossible to make an application of the dam, so that it would hug these teeth at their necks, and permit of a proper preparation of this important surface.

Our next effort was to wrap a piece of gilling twine or flax thread *twice around each bicuspid*, forcing these ligatures well up on the necks of the teeth, and then tying. A small wad of cotton was placed *in the interdental space*, when a larger wad was forced between the teeth and packed firmly.

After wearing this for two days, on the next appointment the dam could be nicely applied and all the surfaces clearly exposed. The dead pulp was removed and the cavity filled satisfactorily.

We would say, that in such cases we have found it preferable on opening into the nerve chamber of a tooth, *especially the molars*, to break through the septum of bone which separates the floor of the cavity from the nerve chamber, *with excavators* rather than with burs in the hand-piece of the dental engine. Because if thus accomplished the nerve chamber will be better defined, and the root canals can be clearer seen and better approached and better cleaned than by the more expeditious, but not as good, way, with the cavity burs.

### BRASS ARTICULATORS vs ALL PLASTER ARTICULATING MODELS.

We much prefer the brass articulator to the all plaster articulating models, especially in full upper and lower cases, but for other cases also.

In mounting the teeth for an entire case the six upper and lower teeth may be permitted to touch; but when the bicuspid are added by slightly separating the articulator by means of the regulating screw in the back, with its accompanying "jam nut," the two jaws of the instrument may be held apart ever so slightly, so as to permit the bicuspid and molars to touch, while the six oral teeth are kept apart the thickness of cardboard which is the proper way to articulate the dentures.

The same rule applies where the lower jaw is provided with natural teeth as far back—or farther—as the second bicuspid.

This could not be regulated with the same precision with the “all-plaster articulating models,” hence we consider the “brass articulator” preferable in such cases.

However, in partial cases, where there are teeth in both jaws which articulate with each other, the “all-plaster articulator” may be employed, as in these cases there is no such thing as “opening the bite,” hence it follows that such articulators are permissible. Even in such cases the brass articulator may be used with equal success and accuracy; we believe, that all things considered, the brass articulator has the advantage over its old brother, the all-plaster articulator.

THEODORE F. CHUPEIN.

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## HOW TO PURIFY WAX AND HOW TO MAKE BASE PLATE WAX.

BY THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

A fair equivalent of base plate wax may be made as follows: Wax which has been used for taking impressions should not be used a second time for the same purpose, unless it is purified. To purify the wax and cleanse it of foreign matter, procure a funnel and cut off the spout. Place an old, but clean, tomato can on your laboratory Bunsen burner, having half filled it with water. Put the funnel in this, letting the edges rest on the rim of the can. Put your wax in the funnel and let the water in the can boil. The boiling of the water will melt the wax in the funnel, and all pieces of plaster, sticks, or other foreign matter will fall or settle to the bottom. When the wax is all melted, let it cool, then by slightly heating the outer edges of the funnel, the cone of wax will drop out. You can now cut off the small end of the cone, which will be found to contain all the impurities.

Now take another clean tomato can, and fill it one-third full of water; place your cone of wax in it, and melt it by boiling the water. The base plate wax will be made much tougher if some of the wax peeled from the paper—or card wax—on which artificial teeth come, is added. While the wax is melting, prepare a smooth round bottle of a size that will go inside the can in which the wax is being melted. Fill the bottle with iced water and cork it. Make a lather of soap and lather the outside of the bottle. Have still another tomato can half filled with cold water, and place this near the one in which the wax is being melted.

As soon as the wax is all melted, put out the blaze and dip your bottle into the melted wax. Remove it from the can of melted wax and dip it into the can of water. Plunge it again into the melted wax and again into the water, once more into the wax and once more into the water. These three dippings will be found to make the wax about the right thickness. If it is wanted thicker, one or two more dippings will accomplish this; or if it be wanted *very thin*, one or two dippings alone may be found sufficient.

The wax may now be removed from the bottle by passing a knife around the bottom and down its side, when it can be peeled off, flattened, cut into square pieces and put away for ready use. The bottle is then ready for another dipping, and the process repeated until a sufficient quantity is made.

In melting the wax it should not be permitted to boil, as it would then be frothy and unfit for use. As soon as the wax is all melted the blaze of the burner should be extinguished and the dipping begun. The dipping should not be continued too long, otherwise the wax becomes chilled by the ice water in the bottle, which would make the base plate too thick.

It will be found that base plate wax thus made is thicker around the bottom of the bottle than at the upper margin, because the wax coats more at this point than it does above. This, however, is no disadvantage, as the thinner part of the base wax may be placed towards the back part of the model, and the thicker part towards the front, where the artificial teeth are mounted.

In the absence of card wax to toughen this base wax, a little Venice turpentine added to the melted wax will effect the same object.

While base wax thus made may not be equal to the nice sheets the dentist purchases from the depots, it will be found to subserve every purpose, and save considerable in the course of the year. Besides this, the sheets furnished us are often *too thick*, and by having it thinner, for some styles of work, the base wax thus made will often be preferable.

### OXYCHLORIDE OF ZINC CEMENT.

By THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

Considerable use was made of this cement at one time, before the advent of oxyphosphate cement. It mixes more kindly than the latter, but is not as adhesive. It caused pain when introduced into a cavity, and probably to this cause it was superseded by its younger

rival, yet we consider that no dental office is well equipped without this valuable filling material.

For nerve capping, or in cases where the nerve is nearly exposed, oxychloride of zinc should always be used. We believe its introduction into a cavity, in such cases, results in the death or mummification of the pulp; but this occurs so gradually, so painlessly, and so benignly that the tooth remains serviceable for many years without giving trouble. We have seen cases where oxyphosphate of zinc has been used to cap nerves, or as an intervening media where the nerve was covered by only a thin septum of dentine, but such use has generally resulted in the removal of the filling and the intentional devitalization of the pulp. We speak from experience of this valuable filling material in such cases.

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### A RIGHT-HAND GLOVE.

A right-hand woolen glove will be found very convenient to mitigate the excessive heat when lifting the crucible from the fireplace with the aid of the spring tongs, when melting gold or silver before pouring in the ingot mould, or even when lifting a ladle of zinc or lead before casting a die. We say a right-hand glove, but of course if the workman be ambidextrous a left-hand glove will do as well.

And now the left-hand glove.

This will be found useful in holding a lump of charcoal while fusing a small nugget of gold, to prevent the flame from the blowpipe burning the hand.—T. F. CHUPEIN.

### SELECTED ARTICLES.

#### MAKING DENTAL ALLOYS AND CEMENTS.

By LOUIS SHAW, M.D., Brooklyn, N. Y.

The investigations and writings of Dr. Black have induced many to make their own alloys. To aid in this the writer gives his method in the *International Dental Journal*, from which we make extracts as follows:

I shall not discuss the various ways in which an alloy can be made. Each manufacturer of an alloy no doubt has a way of combining the metals that he thinks best. But I shall describe a method that I have used for a number of years with satisfactory results.

For melting the metals I have used a gas furnace made by the Buffalo Dental Manufacturing Company, and known as No. 40a, Fletcher crucible furnace. This can also be had to work with kerosene. A plumbago crucible comes with the furnace. The other articles necessary are an ingot mould, a small pair of crucible tongs, and a short clay pipe-stem.

The silver is first melted, adding enough borax to cover its surface and protect it from the air. If the alloy is to contain copper, the blast must be kept up a few minutes to raise the temperature of the melted silver. The copper, in the form of very thin sheet or foil, is now added piece by piece.

If it is to be an alloy containing gold, the proper proportion of gold-foil scrap, wrapped in a piece of paper, is dropped into the crucible.

When the gold or copper is melted, the blast is kept on a few minutes and the other metals of the alloy added, those having the highest melting points first. The tin, of course, will come last, and is best added in pieces the size of a large marble.

As soon as the last piece of tin is added the crucible is held in the furnace by tongs, and its contents stirred vigorously with the clay pipe-stem, suitably fastened to a piece of wood. While still stirring, the metal is quickly poured into the ingot mould. The stirring and pouring before the metal comes to rest is to produce as uniform an ingot as possible.

Some may have difficulty in procuring pure metals. Pure silver, in grain form, is sold by gold and silver refiners. Pure copper, zinc and tin can be bought from those who supply analytical and experimental chemists.

The ingot is readily reduced by a large coarse file, which must be kept for this purpose only. Passing a magnet through the thinly-spread filings will remove any particles of steel from the file.

The filings must now be tempered as directed by Dr. Black, either by keeping them in an oven at a temperature of 120° F. for three days, or putting them in a glass flask and immersing the flask in boiling water for fifteen minutes.

Lately I have adopted three formulæ suggested by Dr. Black. They are the following : one of silver and tin—viz., silver seventy-four parts, tin twenty-six parts ; one containing copper—viz., silver sixty-four parts, copper four parts, zinc one part, tin thirty parts ; and one containing gold—viz., silver sixty-eight and one-half parts, tin twenty-five and one-half parts, gold five parts, zinc one part. Dr. Black speaks favorably of this last formula.

## CEMENT.

As is generally known, cement powder is oxide of zinc, usually with some silica added, with the idea of making it more resistant to wear.

In most of the directions for preparing this powder, oxide of zinc is dissolved in nitric acid, and the nitrate of zinc is afterwards heated to drive off the nitric acid, leaving zinc oxide.

This part of the process is enough to deter most dentists from trying to prepare cement powder, as the fumes of nitric acid are very corrosive and difficult to get rid of, except through a chimney arranged for carrying off acid vapors.

This dissolving of the oxide is not necessary, and, by omitting it, any one can prepare the powder with little difficulty. Most oxides of zinc made in the United States are too impure for dental use.

French oxide of zinc is much purer and makes a very good cement. Hubbuk's English oxide of zinc is the purest I have been able to obtain, and produces a very white cement. All other oxides I have tried produce a more or less yellow product. This yellow color is owing probably to traces of the oxides of other metals. These are not sufficient, however, in the oxides of zinc prepared for medicinal use, to affect their value for cement. If a white cement is not desired, they answer very well.

The oxide is placed in a sand crucible, and the cover luted on with potters' clay mixed with water.

The crucible is now placed in a coal fire—a range will do—and covered with coal, so that it will all be brought to a red heat. After being held at a red heat for two hours, it is removed and allowed to cool.

The oxide is now removed and rubbed to a fine powder in a Wedgewood mortar, when it is bottled to keep it from the air.

The liquid is made by dissolving in water sufficient glacial phosphoric acid to make a dense syrup solution.

It is difficult to state the exact composition of the liquid chemically, as all commercial glacial phosphoric acid contains from seven to fourteen per cent. of sodium phosphate. On being dissolved, the glacial phosphoric acid slowly takes up another equivalent of water, and finally a third, becoming at last ortho-phosphoric acid. The liquid may then be a mixture of the three phosphoric acids holding sodium phosphate in solution. My knowledge of cement liquid is unsatisfactory, and I cannot always get uniform results with different lots. I have not been able to get pure glacial phosphoric acid, but hope

with further study of the phosphoric acids to be able to prepare a liquid that will be always uniform. The process described, however, produces an oxyphosphate cement that compares favorably with any I have purchased, both as to working qualities and insolubility.

[After all, is it not better for a dentist to buy his amalgam and cement from some reputable manufacturer?—EDITOR *American Dental Weekly*.]

It is better, but it is well to know how it is done.—ED.

### ARTICULATING TEETH.

By D. D. ATKINSON, D.D.S., Brunswick, Ga.

In prosthetic dentistry a correct articulation is of paramount importance. A denture made from a faultless impression will fail if the teeth on one side strike before those of the other. The lower jaw is the only bone in the human anatomy the exercise of whose function is dependent upon its exact relation with another bone with which it is not otherwise articulated. If artificial dentures are not constructed so as to preserve this continuity in the occlusion of the teeth, they will fail of their purpose. To show how to place the models on the articulator properly, so that the teeth will not need to be ground after the plate is finished, so that each tooth will occlude in the finished case in the mouth just as it did on the articulator, is the purpose of this article.

The temporo-maxillary being a double arthrodial articulation permits the greatest latitude in the movement of the mandible.

It is not easy for an edentulous person to close the jaws so that the upper and lower jaws will occupy their natural apposition to each other. However great the difficulty in securing this apposition as refers to the lateral movement, and that from before backward, be it remembered that in its vertical movement the mandible always bears a fixed relation to the superior maxilla and cannot be changed, no matter how wide the jaws are opened, nor how far the lower jaw may be drawn to one side. To determine the vertical relation between the two jaws, we will place a sufficiently large lump of softened wax in the mouth and direct that it be closed sufficiently to make a clear impression or indentation in the wax on both sides above and below. It matters not at this time if the bite was too far forward or to either side, the occlusion or vertical position will be correct. Suppose the case to be full upper and lower, we will now proceed. The lump of wax as removed from the mouth is chilled

with cold water and trimmed on each side until only the bottoms of the impressions are left. To these the two models must be adjusted, the upper and the lower each on its respective side at the same time, and each fastened with molten wax. Let it be certain that the models touch the bottom of the impression in the lump wax bite. In this position they are to be placed in an articulator and fastened, after which the lump wax bite may be cast away. A common articulator which swings like the mandible at the condyle is a splendid instrument for the purpose. Now wax trial plates are to be made with wax rims to represent the teeth, and adjusted to each other on the articulator with a level surface all around. A good way is to make the upper first and chill it in water, then place a warm rim on the lower and close the articulator, having a sheet of wet paper between the two. The articulator may then be opened or closed without impairing the occlusion. It will be found that in placing these wax plates in the mouth the rims will be in perfect contact all around; but the patient may have closed the lower jaw too far forward or to either side upon the lump of wax in the first instance; if so, it can now be easily detected and corrected by several successive movements of the jaw and noting the correct position of the wax, which will inevitably be shown after a few efforts. This must be well marked on the wax, and both removed from the mouth and fastened together in their new position. By adjusting the models to the lump of wax, we have the absolutely correct occlusion, and by placing the wax plates in the mouth, we have corrected any error in the lateral movement. If the lump wax bite was incorrect, it will now be shown, as the wax plates in their corrected position will not fit the position of the models on the articulator. To remedy this take off the upper model from articulator, place it in the wax plate, and reattach it to the articulator. The teeth may now be arranged with an abiding faith that each tooth will strike in the mouth just as it does on the articulator.

For a full upper or lower set separately, the procedure is the same—a model must be made of the opposing teeth and adjusted to the lump wax bite, which must have been trimmed until only the bottom of the impression of the alveolar ridge is shown on one side, and that of the points of the teeth on the other. In all cases, full or partial, it is best to have a correct model of the opposing teeth. I mean of all the teeth of the opposite jaw.—*American Dental Weekly.*

## IMPRESSIONS OF MODELING COMPOUND.

Dr. W. E. Robertson suggests the following method for perfecting impressions of modeling compound :

Secure the impression in the ordinary manner, and after removal from the mouth, and when it has become quite hard, trim off any surplus until it corresponds to the shape of the rubber plate or base to be constructed. Then hold the inner surface of the modified impression over the flame of a spirit lamp, or Bunsen burner, until the surface of the impression only is softened, but not the main body of the impression. Then return the impression while it is warm to the mouth, and after firmly pressing it home, allow it to harden before removing it.

Dr. Robertson claims that such a method will give more satisfactory results than the ordinary manipulation of modeling compound —*Amer. Journal.*

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TOOTH DISCOLORATION FROM ARSENICAL PREPARATIONS.

Sometimes after an application of arsenic the patient returns, and though less than twenty-four hours may have passed, the tooth shows unmistakable signs of discoloration. First, we may ask how this is to be explained? Arsenic is a most powerful constrictant, and when applied to a pulp, in which the capillaries are engorged, it is conceivable that this violent constriction causes an actual rupture of the small blood-vessels, so that the blood is emptied against the walls of the pulp canal, and passes into the tubuli of the dentine, producing the pink or brown color observable when the discoloration originates in this manner.

In a recent case of this sort the pulp was removed, fortunately, without tearing, and the copious hemorrhage which followed was finally arrested with hot water. The dam, of course, was in position, and canal was packed with cotton saturated with caustic pyrozone (25 per cent. sol.) and covered carefully with hard gutta-percha. This was left for twenty-four hours, at the end of which period the tooth was absolutely restored to normal color, and was therefore promptly filled, no subsequent discoloration having thus far occurred. The success of this bleaching depended upon the prompt application of the discolorizing agent, before the blood, which had entered the tubuli by extravasation, had become coagulated. An important moral, which

may be deduced from this lesson, is to the effect that when treating anterior teeth with arsenic, especially where the capillaries are probably engorged, the arsenical dressing should not be allowed to remain in place for more than one day, if so long.—*Extract from Ed. Items of Interest.*

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### THE LIBBY METHOD.\*

BY DR. J. L. WOLF, Washington, D. C.

Having had during more than eighteen months' experience opportunities for observing the most gratifying results from the use of the Libby hand-pressure gold pluggers, supplemented by the Rogers mallet points, especially in those cases which, by virtue of unusual difficulty attending the insertion of the filling, furnished excellent tests as to the efficiency of the instruments, it seems of sufficient importance, and this a fitting occasion, to call the attention of those who may not be entirely satisfied with the results obtained by the generally accepted methods. The feeling of confidence as to the results which follow the use of this method contributes greatly to avert much of the sensation of exhaustion often experienced.

As mallet points supplementing the Libby hand pluggers, the Rogers points are of incalculable value for the two-fold purpose of conservation of physical strength and condensation of material. With the Russell electro-magnetic mallet as the propulsive power they are capable of a very wide range of application.—*Ohio Dental Journal.*

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### THE AMALGAM QUESTION.†

BY J. N. CROUSE, D.D.S., Chicago, Ill.

There are elements of uncertainty about amalgam and its use in dentistry which are more than trivial. Whether performed thoroughly or in the most careless manner, fillings of amalgam are far from satisfactory. What is the stimulus to put forth our best efforts in the use of a second best filling material, when out of more than sixty different preparations, accurately tested, not one met all the requirements for a good filling material? We are indebted to Dr. G. V. Black for the first scientific method of testing amalgam, but the

\*Abstract of paper read at Southern Dental Association, Old Point Comfort, Va., August, 1897.

†Abstract of paper read before the American Dental Association, Old Point Comfort, Va., August, 1897.

average dentist is without any means of determining the quality or behavior of the material that is more used than all others combined. It is entirely guess-work in making a selection without an elaborate and expensive outfit and the expenditure of much time in careful work. A common fallacy in the selection of an amalgam is that it must be very plastic and easily mixed. This is a great mistake, as it is impossible to pack it perfectly in a cavity. Another mistaken idea is that it is injured by manipulation after it commences to set. The exact opposite is true, for a stronger and better mass can be made if the amalgam be put to place by heavy hand pressure or by malleting after it has fairly begun to set.

A third fallacy is that the least amount of mercury possible to make the mass pliable is the correct manner of mixing, but in this case again the opposite is true.

Having brought with me a micrometer and dynamometers, and other implements, I invite inspection and practical tests. Many essential qualities can be shown and great benefits gained by taking part in this work.—*Ohio Dental Journal*.

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### NITROUS OXIDE GAS.

C. Q. Colton, of the famous Colton Association of New York City, says: There are, no doubt, many dentists who manufacture impure gas, or administer pure gas after it becomes stale. There is this important fact to be considered. There is no injury produced by the inhalation of stale gas, only it fails to produce the effect desired. And if the gas is so impure that its inhalation would prove fatal, it cannot be breathed at all—it would be coughed up at once. When the gas is pure, it has no more taste or odor than the common air, and is perfectly agreeable to the lungs. I suppose that, in showing patients how I wish them to commence to breathe the gas, I inhale, in the aggregate, twenty gallons myself every day. There is no reaction following the inhalation of the gas. In this respect it is unlike all other stimulants. And this, simply because it acts on the blood, and not on the substance of the lungs or other organs. Consumptive patients will often feel stronger for days after inhaling it, because it supplies to the blood that element—oxygen—for the lack of which they are growing weaker and weaker. The good effects, however, are only temporary.

Where neuralgic pains arise from a low vital or unoxygenized condition of the blood, the gas affords instantaneous relief. This fact—

and it is a fact—has not yet engaged the attention of the medical profession.

Of what is nitrous oxide, or laughing gas, composed? It is composed of precisely the same elements—oxygen and nitrogen—as the common air, only the proportions are different. In the air we have (in round numbers) one-fifth oxygen and four-fifths nitrogen. In this gas there is half oxygen and half nitrogen, or, by volume, one of oxygen to two of nitrogen. Oxygen is the life-giving principal of the air, and in this gas we have more of it; a person lives a little faster while under its influence.

Chloroform and ether are sedatives, and depress the action of the heart, running the pulse down from 70 to 20 or 25 beats to the minute; and this, because they cut off the necessary supply of oxygen. The laughing gas, on the contrary, acts as an exhilarant, as by supplying an extra supply of oxygen to the lungs, the pulse is increased 15 to 20 beats to the minute. The former agents carry the patient down towards the point of death; the latter up to increased life.

I suppose I am safe in saying that, in the use of chloroform, one death has occurred in every 1,000 times it has been administered. I have given the gas 168,000 times without such an accident. And I doubt if there has ever been a well authenticated case of death caused by the gas, or a death in which there was not some other cause sufficient to produce the result.

Although my connection with this great discovery was incidental, yet I think it will be admitted that I was the occasion of the discovery, and that but for me it would not have been made; certainly not at that time. And is it too much to claim that the world is practically indebted to me for the anesthetic use of the nitrous oxid gas, having received and demonstrated its value after it had been abandoned and forgotten for the space of fifteen years?

I leave the subject to the impartial judgment of the profession and the public.—*Items of Interest.*

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### BOOK NOTICE.

**TIN FOIL AND ITS COMBINATIONS FOR FILLING TEETH.** By Henry L. Ambler, M.S., D.D.S., M.D.

A short "Monograph" published by the S. S. White Dental Mfg. Co., in Philadelphia, and Claudius Ash & Sons, in London, Eng., has been sent us for review.

Being entirely in accord with the author as to the merits and value of this material for the preservation and filling of teeth, we can only add our testimony to his in the approval of what he sets forth, and our recommendation not only of the material, but of the perusal of the work.

Several suggestions are set forth, both as to its use *alone*, as well as to its *combination with gold*; and also its use with the matrix, in a manner recently suggested by Dr. Henry Register, which, from the softness and tractability of tin, would recommend it particularly for such cases. We might say very much of the material and the book, but prefer to let those intrusted in the subject read the book for themselves.

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### OBITUARY NOTICE.

THOMAS W. EVANS, D.D.S.

Dr. Thomas W. Evans, the famous American dentist, died suddenly at Paris, France, November 14, of angina pectoris.

Dr. Evans was 75 years old. He had only recently made a visit to Philadelphia on the sad mission of burying his wife, and it was only after his return to Paris that death overtook him.

Though accumulating considerable wealth by the practice of his profession; principally among the crowned heads of Europe, as well as of the nobility, the bulk of his fortune was accumulated in the appreciation of real estate in the neighborhood of the "Bois de Boulogne."

His fortune has been variously estimated; some reports stating he had lost it all, and died almost in indigent circumstances, other reports according him wealth aggregating between six and thirty million dollars.

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### PRACTICAL PLACE.

#### A NEW CLEANSING FLUID.

A new spot-remover, or cleansing fluid, which, it is claimed, is of extraordinary value, consists of the following ingredients :

|                   |          |
|-------------------|----------|
| Saponin .....     | 35 parts |
| Aqua .....        | 650 "    |
| Alcohol .....     | 350 "    |
| Benzine .....     | 8,940 "  |
| Mirbane Oil ..... | 25 "     |

—*Nat. Drug.*

## TO HARDEN RUBBER.

According to a German chemist, rubber can be hardened by mixing powdered aluminum with the rubber before vulcanization.—*Exchange*.

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## INFILTRATION ANÆSTHESIA.

The fluid consists of a very dilute solution of cocain and morphia, with a small portion of chlorid of sodium. The needle of the syringe is introduced at a point in the area which it is desired to render anæsthetic, and keeping it parallel with the surface is pushed on until the eye is hidden. A few drops of the fluid are then injected, and a wheal is instantly produced which is anæsthetic. The needle point is then withdrawn and reinserted within the wheal in the line of the proposed incision, and the process continued until the whole area that it is desired to anæsthetize has been rendered insensitive. If the operation be a simple skin incision, as the opening of an abscess, this is all that is necessary; but if a small tumor is to be removed, it will be necessary to infiltrate the tissues under the skin after this has been incised. In minor operations it is very successful. Its safety is beyond question.—FIFE, *Dental Digest*.

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## FOR THE PROTECTION OF CEMENT FILLINGS.

Resin and wax, equal parts, melted on spatula and poured on filling before it is wet, is superior to either wax or paraffin.—*Med. Brief*.

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## MASSAGE IN INFLAMMATION OF THE GUMS.

In cases of stomatitis showing on the external plates of the alveolar walls, in most cases of turgidity, or disturbed circulation about the gingivæ, massage with the ball of the finger will be found very useful. It presses the blood out of the distended capillaries, hurries the circulation in the sluggish blood-vessels, and gives tone to the whole local territory, re-establishing the nutrient currents and promoting resolution of any exudate material. Let the patient rub the gums and disturbed territory with the ball of the finger frequently.—W. C. BARRETT, M.D.

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## LABORATORY HINTS.

To keep your solder in place, add a little gum arabic to your flux, and rub with the borax and water on the slate.

To make sticky wax for holding clasps in place, use resin two parts, beeswax one.

To prevent plaster from adhering to the palatine surface of vulcanite plate: Just before packing the case, coat the model with a thick solution of soap, almost any kind of soap will do, but that which makes a thick lather in the shortest time is the best.

#### ARTICULATING TEETH.

Always take an impression of the lower teeth when making an upper set, and in taking the bite, have wax trimmed to show the length you wish the teeth to be, and bite into it just sufficiently to show the tips of cutting edges and cusps where the model made from lower impression can be placed in proper position, etc.

#### TO DUPLICATE MODELS AND IMPRESSIONS.

Take printers' ink-roller composition, heat in a water bath until well melted. Grease the model slightly with lard, and place it the same as if to mould a metal die, cover with a metal ring (a tin can opened at both ends will do), and pour the melted composition over the model. Let this stand over night. By morning the material is hardened, and the model can be withdrawn. The composition being elastic, it retains its shape, and a hundred models may be poured if necessary.

#### TO HARDEN PLASTER BOIL IN PARAFFINE.

To give your plaster casts or models the appearance of ivory boil them in pure white wax.

By PROF. P. G. TEMPLETON, Pittsburg, Pa., in *Dominion Dental Journal*.

#### A FILLING POLISHER.

Dr. Genese, of Baltimore, is of the opinion that Johnston's Ethereal Antiseptic Soap is an exceedingly valuable article to use when polishing gold fillings with burnisher. It acts as a lubricant and polisher as well.—*Therapeutic Notes*.

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#### STERILIZING PUTRID CONTENTS OF PULP CANALS.

Dr. C. H. Rosenthal, of Cincinnati, sterilizes putrid pulp canals by electro decomposition.

At a clinic before the Chicago Dental Society recently his method was producing nascent chlorine and driving the same through the pulp canal from positive to negative by osmosis. This was done by

placing a saturated solution of sodium chloride on a piece of cotton and attached to the positive pole, which, upon contact, eliminated large quantities of free chlorine. The antiseptic qualities of the chlorine, together with the decomposing effect of the galvanic current, he claimed, renders these septic pulp-canals perfectly aseptic and ready for immediate root filling before removing the rubber-dam, claiming it advantageous to do so to obviate the possibility of regenerating the pulp-canal by contact with the saliva, which contains ever-present germs. The canals were filled in the following manner: A piece of orangewood was whittled down to the size of the pulp-canal, the wood then saturated with a double strength tincture of iodine, and a paste of iodoform and glycerine was then placed on the stick and carried to the pulp-canal and applied with a churning motion, the stick was broken off and left in the pulp-canal, the tooth was then ready for filling.—*Exchange*.

Don't approve of the stick part of the operation.—Ed.

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#### DANGER IN CARBOLIC ACID.

Prof. Czerny, of Heidelberg, warns against the indiscriminate application of carbolic acid, since it frequently gives rise to the so-called carbolic gangrene. This is caused by the clogging of the capillaries, due to the action of the phenol on the blood corpuscles. The author advises the use of less harmful antiseptics, as solutions of salicylic or boric acids, alum or corrosive sublimate.

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#### INVESTING MATERIAL.

One of the best investments for metal cases that are required to withstand a very high degree of temperature, is a mixture of two parts of not two fine plaster of Paris to one part of ground asbestos, grade 3, that has been passed through a No. 12 sieve to rid it of any coarse fibres. If the plaster is strong, a little less of it may be employed in the mixture. This will not crack or shrink.—*Dental Practitioner and Advertiser*.

Good for nothing. It is rotten, soft and unreliable, and will disappoint you.—Ed.

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#### TREATMENT FOR PYORRHEA.

Sulphate of copper is a most useful agent in the treatment of pyorrhœa, and it is also a favorite of mine in the treatment of abnormal swelling of the gums from whatever cause. The gums are

dried as thoroughly as possible and the copper applied by means of a piece of orange wood, whittled thin, which is first dipped in water and passed into the copper, a quantity of the powder will cling to the stick; then pack the copper down between the teeth and swollen gums. You can use it freely. It is not necessary to exercise care as to the quantity of the powder to be used; let it remain there for two or three minutes, then with a syringe of warm water wash the excess away. You will be surprised in the course of two or three days, and also much gratified, to see the extent to which the swollen gums have been reduced.—A. H. PECK.

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#### INGOT MOULD.

For an ingot mould to order use the common black lead, or stove polish, of oblong form. Two of these wired together may be made to answer almost all the requirements of dental casting.—*Odontographic*.

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#### FORMALDEHYDE.

Formaldehyde is at present the most popular antiseptic and disinfectant. It is found in the market as a forty per cent. solution. Eight to ten per cent. destroys the spores of micro-organisms in ten minutes. A one per cent. solution destroys cultures within an hour, and disinfects and renders feces odorless. A three per cent. solution will remove all infection from the hands; and one part in ten thousand prevents the growth of pathogenic micro-organisms.—*Am. Med. and Surg. Bulletin*.

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#### ADMINISTRATION OF ETHER FOR ANÆSTHESIA.

During the administration of ether the most alarming danger signals are sudden pallor of the face, dilatation of the pupils, and darkening of the blood. When the symptoms present themselves, the anæsthetic should at once be withdrawn, and resuscitating measures instituted.—HEARN.

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#### DIRECTIONS FOR THE PREPARATION OF A STERILE 2 PER CENT. SOLUTION OF EUCAINE HYDROCHLORATE "B."

To 1 part of Eucaine Hydrochlorate "B" add 49 parts of distilled water. Heat the mixture in a test tube over an alcohol lamp under constant shaking until solution is effected. If it is not quite clear,

the solution must be filtered. It is then heated to boiling in the test tube, the mouth of which must be plugged with cotton. The plug should only be removed just before using the solution to prevent contact with the air. Cooling can be hastened by holding the tube in cold water; the solution is then ready for use. *Distilled water only, without the addition of any antiseptic*, should be used for the eucaine solutions.

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#### TOOTH WASHES.

F. H. H., Indiana.—For a cleansing wash a solution of soap is to be recommended. It may be made after the following formula :

|                         |                   |
|-------------------------|-------------------|
| Castile soap.....       | 1 oz.             |
| Alcohol.....            | 6 ozs.            |
| Glycerin .....          | 4 ozs.            |
| Hot water.....          | 6 ozs.            |
| Oil of peppermint.....  | 15 mins.          |
| Oil of wintergreen..... | 20 mins.          |
| Oil of cloves .....     | 5 mins.           |
| Extract of vanilla..... | $\frac{1}{2}$ oz. |

Dissolve the soap in the hot water and add the glycerin and extract of vanilla. Dissolve the oils in the alcohol, mix the solutions, and after 24 hours filter through paper.

If the "wash" is intended simply as an elixir for sweetening the breath, the following preparation, resembling the celebrated eau de botot, will be found very desirable :

|                        |          |
|------------------------|----------|
| Oil of peppermint..... | 30 mins. |
| Oil of spearmint.....  | 15 mins. |
| Oil of cloves.....     | 5 mins.  |
| Oil of cedar wood..... | 60 mins. |
| Tincture of myrrh..... | 1 oz.    |
| Alcohol .....          | 1 pt.    |

Care must be taken not to confound the oil of cedar tops with the oil of the wood. The former has an odor like turpentine; the latter has the fragrance of the cedar wood.

When liquid washes like the last are used they should be supplemented occasionally with a powder, soap or paste, as such liquids alone will not keep the teeth white and clean.

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#### CHRONIC GASTRITIS.

Prof. H. T. Webster, M.D., of San Francisco, in a recent publication, discusses chronic gastritis and its treatment. In speaking of

the diagnosis, he says: "The use of the stomach tube will afford best means of diagnosis. If siphonage be practiced an hour or so after eating, hydrochloric acid will usually be absent, and lactic acid, associated with fatty acids, are present with a large quantity of mucus. If siphonage be practiced seven hours after eating, undigested food will be found still remaining in the stomach, while in cases of functional dyspepsia it will have disappeared. Malignant disease will be excluded by lack of cachexia, absence of perceptible tumor upon palpation, and by the character of the material vomited, coffee-ground material soon appearing in cancer. In gastric ulcer, a diagnostic feature is frequent hematemesis."

He believes that if a proper diet be pursued and rational medicinal treatment be employed, almost every case of chronic gastritis will improve readily, unless it be complicated by gastric carcinoma, gastric ulcer, or hepatic, renal, or pulmonary disease. His treatment consists in lavage, disinfection and cleansing of the viscus with hydrozone. Lavage should be practiced every morning before eating, a small quantity of water (a pint) being used at first, which should be increased to two or three quarts as the treatment is carried on. The water should be warm (93.6° F.), and solutions containing Glauber's salt, aspepsin or boracic acid are often useful. Regarding the use of hydrozone in this affection, he says:

The introduction of hydrozone as a remedy in this condition was an innovation of remarkable value. A dram of Marchand's hydrozone, added to four ounces of boiled to divide all four of the collateral nerves which supply it. Investigations show that a single nerve is capable of maintaining cutaneous sensibility for the leg. This throws light upon paradoxical phenomenon long known, but not understood—that the division of a nerve is not necessarily followed by a loss of sensibility in the area to which it is distributed; and also the interesting fact which has not been heretofore fully appreciated—that there are many nerves that fully supply the areas of other nerves, for instance, the popliteal nerve.—*Modern Medicine.*

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#### FETID BREATH CURE.

According to a recent statement in *Sem. Med.*, ichthyol is one of the best and most rapid cures for the fetid breath of ozena. The nose is first douched with a warm 2 per cent. solution, and the mucous membrane is then swabbed with a 30 per cent. solution. This is also good in cases of rhinitis and pharyngitis sicca, without ozena.

THE  
Dental Office and Laboratory.

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No. 2

CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

[FOURTH PAPER.]

There are some patients to whom the display of gold in their mouths is not objectionable. Indeed, they rather like it. To such, an incisor or cuspid *all gold crown* may be inserted, even though the æsthetical taste of the dentist may be averted to it. When such a tooth is demanded, the crown, should any of it remain, is restored with wax to its original shape. To do this well it may be necessary to apply the rubber dam over at least four teeth, for the wax will not adhere to the root or remains of the crown unless these parts are made *perfectly dry*. The lost tooth being restored with wax, as is shown by Fig. 62, the rubber dam is *cut away from the teeth*, and the lower teeth brought against the upper ones, to ascertain the occlusion. The lower teeth should not be permitted to strike the wax *at all*; they should be *perfectly free*; for it must be remembered that a thickness of gold will slightly increase the size of the wax tooth when the gold shell is constructed.



A WAX B  
FIG. 62.

After the rubber dam has been *cut away* from the teeth, an impression is taken with plaster of Paris, and a die made by pouring fusible alloy into the impression, being careful to lute each side of the impression to prevent the escape of the melted alloy. This may be done either by the addition of plaster of Paris to the impression or with mouldine. The die being made, the tooth on each side of the one that is to be replaced is cut away, leaving only a "fac-simile" of the tooth remaining. Fig. 62, A and B, are cut away from the die with a saw. A gold shell may be constructed for such a case in the manner described in the 3rd paper of this series, published and illustrated in the January, 1898, issue of this journal, on pages 5 and 7. (See figures Nos. 58 and 59.)

Such a shell may be likewise constructed by *electrical deposit*, on which we shall have more to say farther on.

For making *all gold bicuspid or molar crowns*, these are constructed by bending a ferrule to fit the remains of the root end, and contouring this by means of the contouring pliers. Be sure that the lapped ends are chamfered, as has been recommended and shown by Fig. 47 of the January issue, at page 2, as also that the minutest piece of solder is used to unite the lap. Wherever solder is used, however high may be the karat, it leaves a stiffness at the point of union which interferes with the manipulation at this point, therefore *seamless tubing* is preferable for this purpose. The ferrule being made to fit the root end, it is driven on to the die by placing a flat piece of metal or wood on its upper surface, as shown by Fig. 60. The metal being soft it will curl at the point where it touches the gum festoon on the die, indicating where it is to be cut or filed away, so as to obtain a close fit at these points. The ferrule being made, it is next contoured. This may be done with the contouring pliers, Fig. 63. This contouring,

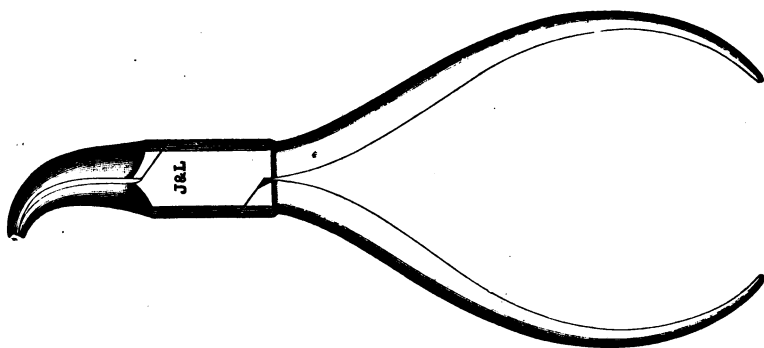


FIG. 63.

though it produces a convexity to the ferrule, does not stretch it at its upper rim. The way to do this is to use both the contouring pliers, as well as to stretch the band at its upper surface on the horn of bench anvil. By using these means in conjunction, a ferrule may be stretched and contoured, as shown by Fig. 64. The stretching is done by holding the ferrule with the fingers of the left hand on the horn of the bench anvil, and delivering light blows on the upper rim of the ferrule until it assumes the form represented by B or C of Fig. 64.

The ferrule is now placed on the root end of the die, and by means of the articulating model or bite, the height is determined. This

should be cut so as to give room for the solid tip which is to be soldered to the upper rim of the ferrule, in order that it may articulate correctly with its antagonist. Bites, however correctly taken, are never as reliable as *occlusions in the mouth*. Therefore we advise, whenever it is possible, to try the ferrule on the root *in the mouth*, and cut it accordingly.



FIG. 64.

To make a solid tip, a piece of gold of the same karat as that used for the ferrule, about 30 gage, and about 1-16 of an inch larger on *all sides* than the die pattern of the

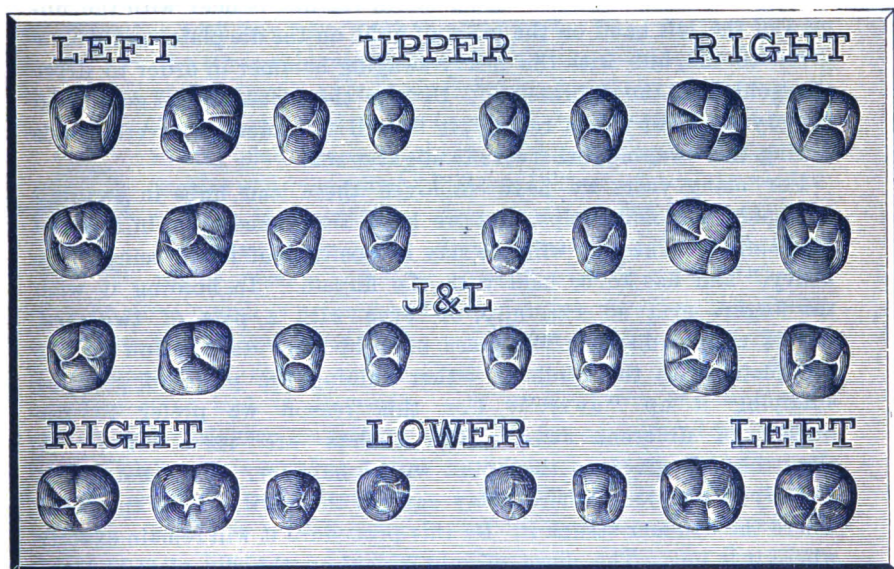


FIG. 65.

die plate that is selected, and is placed on the die plate, Fig. 65, and driven into the depression by means of a lead hub, with a heavy hammer. Fig. 66 represents a piece of gold treated in this way.



FIG. 66.

These die plates are sold at the depots either separately or with what is termed a hub mold. The hub mold is merely a solid piece of brass or iron in which tapering holes are cast and afterwards reamed out smooth. Fig. 67 represents the hub mold. These holes are of two sizes, the smaller for stamping up "Bicuspid tips," the larger for "Molar tips." Lead is melted and poured into these holes of the hub mold, for the purpose of

having a soft metal to drive the gold into the depressions of the die plate. The piece of gold is placed on the die plate, the die plate

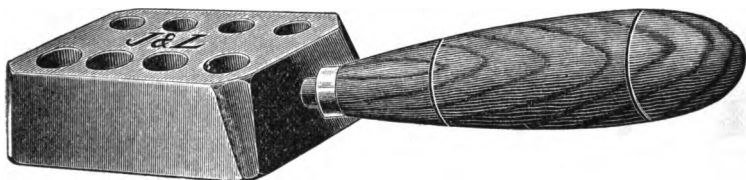


FIG 67.

in turn is placed on the swaging anvil, the hub is held with the fingers of the left hand on the piece of gold on the die plate, and a blow given to the hub with the heavy swaging hammer in order to drive the gold into the depression. Despite the fact that the gold used is very soft, and yields readily, it is well to anneal it several times during this swaging, otherwise it might crack.

For many years we have employed these lead hubs in swaging bicuspid and molar tips, but we have abandoned them in favor of *lead bullets*. The hub will not stay in position of itself, being "top heavy," and has to be held with the fingers. In holding it with the fingers ever so carefully, or even with a pair of tweezers, one is apt to displace the piece of gold from its position on the die plate, with the result of either ruining the piece of gold or stamping it up "awry." For this reason we prefer to use bullets of different sizes. The bullets are used thus: A slight blow is given to the bullet with a hammer. This flattens it slightly at the point where it lay against the anvil, and at the point where the hammer struck it. By this procedure it will remain exactly where it is put. The piece of gold is laid on the die plate and the slightly-flattened bullet laid on, and a blow given. The bullet remaining exactly where it is put, there is no necessity to hold it, even could it be held, and in this way we have found them infinitely superior to the hubs, as well as more reliable.

The "tip" having been swaged, it is cut within a line of the depression around its entire circumference. The inner surface is painted with a creamy solution of borax and water, and heated until the borax fuses all over evenly. Gold of a lower karat (generally 18 karat) is now placed in the depression in small pieces, and this is fused until the depression is full. This has to be done with care, for fear of melting the 22-karat tip. It is recommended to paint the outer, or convex, part of the tip with whiting and water, least any of the gold,

used on the inside, would flow over and daub or smear the occluding surface, and thus spoiling the appearance of the tip. When the tip is filled it is thrown into acid pickle. The tip is then dried and heated so hot that gum shellac will adhere to it. A piece of stick, about two inches long, and about the same diameter as the tip, is also heated, and one end smeared with gum shellac. The gold tip is heated until the shellac melts, when the stick is held against its *occluding face* until the two are cold. The object of this is to have a handle whereby the under-face of the tip may be ground flat by holding it against the side of a carborundum wheel in the lathe.

This being done, the tip is soldered to the ferrule by binding the two together with fine wire, as is shown by Fig. 68. In this cut is shown how the tip is soldered to the ferrule without being filled, hence the square piece of gold, as it comes from the die plate is represented; a solid or filled tip is bound to the ferrule in the same way. The fol-



lowing plan has been suggested for making solid tips for molars and bicuspid. The impression of the tip needed is taken in mouldine. This should be flat on its surface, just like the die plate. Small pieces of gold are placed in the depression and there melted; when in a melted state a stick of stove polish is pressed on the fused mass, resulting in a sharp, well defined solid tip. The stove polish may be had at any grocer. It is supplied in round sticks about four inches long by three-quarters of an inch in diameter. Still another plan has been suggested by Dr. Keyser for making solid tips for molars and bicuspid. See his plan in this number, under the head of "Solid Gold Cusps," in the Report of the Pennsylvania Association of Dental Surgeons, page 45. There is no difference in the construction of bicuspid and molar crowns, hence the description of the one answers for the other.

Dr. Evans described, at the meeting of the New Jersey State Dental Society, in July, 1897, a mode of doing this from one piece of metal. This mode was as follows: Graduated zinc dies were made, as shown by Fig. 61, and from these lead counter dies. A circular piece of metal, 30 gage, is first swaged into No. 1. This gives a concave disk without wrinkles. It is next driven into No. 2, and so on until it nearly approaches the size needed for a molar or bicuspid crown. An impression is taken of the tooth which it is desirable to crown, from which a die is made, when the metal disk is swaged into this form. This plan is applicable where crowns of this kind are intended as buttresses or piers for bridge work, after the crown has been dressed with carborundum wheels, so as to make

the swell of the natural tooth the same size as the neck, as it would be impossible to make a fit otherwise.

We will not conclude this paper before we make another suggestion about "Open faced crowns."

It has been noticed that the part of these crowns which runs along the gum margin, which is only a very narrow strip, scarcely more than the one thirty-second of an inch wide, is very weak, and on this account liable to break. To avoid this liability, we make the ferrule in the usual way, but instead of placing *the lap* on the palatal surface of the tooth, we place it on the *labial surface*. In this way the palatal part of the ferrule is more easily fitted and is only *one thickness*, which need not be more than 32 gage, while the thin part of the crown running along the gum margin may be greatly strengthened by soldering an extra piece of gold, which need not be more than 35 gage over the lap. This not only strengthens the weak part but prevents the disfigurement of the lap.

The suggestion is shown by Fig. 69. Before snipping the ferrule, as is shown, the crown is annealed and then snipped; each piece of the ferrule is bent over and fitted one at a time. The next snip is bent



over on this; this will indicate where the second snip is to be cut, so that the snips are brought together *edge to edge*. Proceeding in this way, every snip is accurately fitted on the die, as well as brought accurately against its neighbor, and will take but a small quantity of solder to unite them all.

We think the suggestion is worthy of consideration, for the reason that the crown will only require a thickness of 32 gage on its palatal face, instead of 30 gage.

The lap should be left a little wide, as shown by Fig. 69, before soldering on the extra piece, as in this way a little ledge will be left for placing the small pieces of solder which are to unite the two.

[TO BE CONTINUED.]

## OUR LOCAL SOCIETIES.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

Paper read at the Pennsylvania Association of Dental Surgeons.

The importance of our local societies, and our attendance at their meetings, must be apparent to all thinking minds. There is no estimating the value of this to the progressive man, or to him who

would be abreast of the times. It may be irksome to the old practitioner to hear repeated things which he has heard stated a score or more times, yet, even to these there are things to be learned. A view may be given to an old subject by one man's conception of it, which had never struck the listener before, which on more careful study and reflection might be lost forever, and never be recalled. The old saying: "In many men there are many minds" finds its fulfillment in the commingling of men interested in any subject.

Apart from the consideration of Social Intercourse, there is no estimating the benefits to be derived from an interchange of views. Papers may be read which are not worth the paper, ink or time spent in their production; but the discussion of the subject of the paper may bring out facts, thoughts and ideas which cannot be estimated.

We, therefore, urge all members of our society to write and offer papers at every meeting. This will not only benefit them in teaching them to express their thoughts, but will also be of benefit in eliciting what our members have to say in discussing and criticising their views.

We also enjoin a regular and full attendance at our meetings. Let it not be with them like the servant in the Gospel who was sent to invite guests to the marriage feast—one who had married a wife, another who had bought a brace of oxen, and another who had a farm and must needs look after it, all begging to be excused. These and the like are all flimsy excuses which should have no place in any earnest man's mind. We make dentistry our life-time study, our means of existence, and we cannot afford to lose an opportunity to learn or to improve ourselves. The attendance at the meetings may, it is true, sometimes be irksome or attended with an exertion; but let us think in the past how earnest men, who were doubtlessly influenced by the same motives which influence us, yet who threw off inactivity, overcame sloth, bid defiance to indolence, threw aside the comforts of the fire-side that they might attend the meetings, lend or give their influence to its deliberations, and thus by their energy place their profession on a higher plane.

Do you imagine that the work is done? That we have learned all there is to be learned? That no one can teach you more than you already know? If you think thus, be sure that the wheels of your car of progress have gotten into a rut which it may take you a life-time of future exertion to get out of, and perhaps never.

Let us enumerate the advantages of an attendance at our meetings. 1st. Social intercourse; without which a man would become "as a

Pelican in the wilderness." 2d. We learn what the leading men in our profession are thinking, doing and saying. 3d. Their experiments, for the amelioration of suffering, with the process they are advocating. 4th. Men will talk of men or improved instruments for accomplishing certain work. 5th. The manner of doing a certain work which has been difficult, but which is rendered simple or easier, by a different manner of procedure. 6th. The strides that are taken by the profession, which, without our attendance at the meetings or reading our literature, we would be ever ignorant of. 7th. The separation of good from bad processes. 8th. The general news of the profession. 9th. The views which eminent men are taking with regard to dental education. We might enumerate many other reasons for attendance, but these will suffice.

How to increase this interest in our local societies is a problem which all thinking and earnest men are racking their brains about.

At one time this society held the leading place of any dental society in this country, and its meetings were attended by the leading men of our profession, and the nights of their meetings were looked forward to with the longing the school-boy has for a holiday. Now since the dissolution of the "Mississippi Valley Dental Society" it remains the oldest dental society extant.

Let each man of us then constitute himself a committee for the furtherance of dental education, and the lifting of this society to the place it once occupied; aye, more to its elevation beyond all past precedent. We can do it if we are earnest; we can do it if we are determined.

It will not do for us to wrap ourselves up in our pride and say, "What is the good of my going to the meeting, they can't teach me anything?" or "What is the good of so and so talking, he does not know more than I, 'he is not the only pebble on the beach?'" Such egotism will result only in one's own discomforture. "From the mouths of babes and sucklings wisdom proceedeth;" hence it follows we may learn from the most humble.

Apart from the attendance at the meetings of our local societies, there is no one thing better than the reading of our current literature. It is impossible for us to attend all the dental meetings, but by reading the journals we are kept in touch with those who are laboring with and for us in other fields.

Let us make our meetings attractive. Let each man engage to write something. Never mind what it is, whether long or short, good or bad, but let him write something that we may have something

to discuss and something to talk about. Let the meetings be a "question box" wherein information of our ignorance, information of our shortcomings, information as to what we wish to know, will be explained or made easier by being talked over. We do not assemble "to show our smartness," but we assemble to receive and to give what experience has taught us.

To come back to the subject of our local societies, I would say that as surely as a man keeps aloof from his fellowman, refrains from social intercourse, isolates himself from his dental societies, he enters a wedge for the cleaving of his calling and its gradual downfall. If you wish earnestly to succeed, identify yourself with different associations, show an interest in their deliberations, do not refuse to do your share of work, saying, "there are others who will do it better than I." All such things will call you into prominence, and men will speak of you as a pushing, active, earnest man, and these little efforts will redound to your success and advancement.

If we love our calling with the proper spirit, and wish to see it take its place among the humanitarian professions of the healing art, to see it grow in importance and maintain its honorable usefulness, it behooves us to do all we can to assist in its growth, and extend its beneficence broadcast.

### A GOOD SOLDERING BLOCK.

By THEODORE F. CHUPPIN, D. D. S., Philadelphia, Pa.

A good soldering block for small work in the laboratory may be made as follows :

Take a piece of sheet iron about four inches square and cut the

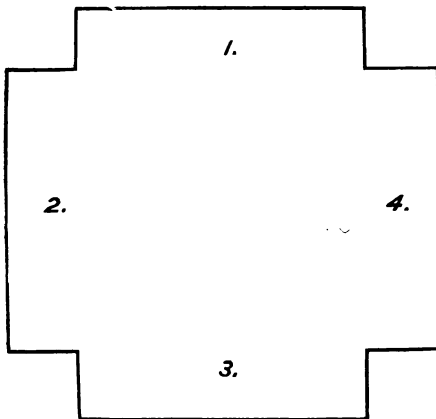


FIG. 1.

four corners, as shown by Fig.

1. The edges are bent so as to form a box. Punch a hole in the center and secure it to a handle with a large headed tack or nail. Now mix equal parts of plaster of Paris, powdered kaolin clay, powdered asbestos, and powdered charcoal, grinding these in a mortar until thoroughly mixed; then moisten with water to the consistency of putty, and transfer to the prepared sheet-iron box. While the mass is still soft, an

8 ounce weight may be pressed into it, so as to form a depression to prevent the article which is being soldered from falling off. Fig. 2 represents the completed device. For still greater convenience the device may be provided with supports, as shown in the cut. These

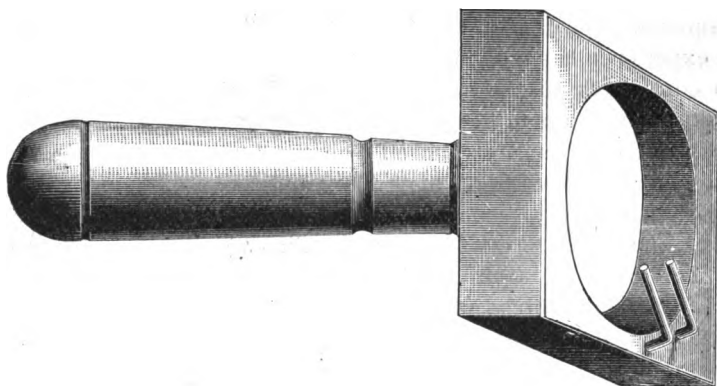


FIG. 2.

are merely two pieces of iron wire, bent like Fig. 3, and sunk into the mass while it is still soft.

Another convenience may be readily made, somewhat in the same way, to serve as an ingot mould, for melting small quantities of gold or silver under the blow-pipe. A piece of sheet-iron, about the size and shape of a postal card, is cut as shown by Fig. 1, and bent into a box form. A piece of stout metal is rivetted to the bottom to serve as a handle. The box is filled with the mass as above given, and a depression is made into it after it hardens, as shown by Fig. 4. The gold is melted in the depression A, when a little tilt conveys the melted mass into the depression B. Lest the gold be spilt by this movement, a piece of metal like C is placed over the depression B, and held in place by stout iron wire elamps, like Fig. 5.



FIG. 3.

Dr. Essig, in his late work, gives the following formula for a filling for these soldering blocks :

Mix some starch paste, by combining one part of starch with six parts of boiling water, stirring these until the starch is thoroughly mixed with the water. Put this paste in a mortar, and add to it charcoal

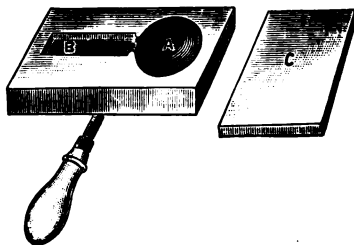


FIG. 4.

(which has been ground up but not to too fine a powder), until the three ingredients are formed into a mass like stiff putty. This may



FIG. 5.

be put into pan—or into a receptacle like Fig. 2—to which a stout iron handle is rivetted, and the wire filed to a tang and fitted into a wooden handle. The pan with the mass is then heated until all the starch is driven off, when it is ready for use for soldering crowns or small bridge pieces; or if made larger, as a receptacle for soldering larger work.

### A SIMPLE WAY OF MAKING A GOLD CROWN FOR CERTAIN CASES.

BY CHARLES P. CHUPEIN, D.D.S., Philadelphia, Pa.

As glaring and unsightly as an all gold crown appears in the front of the mouth, such crowns are often demanded, the desire for them being carried even to the extent of mounting them on artificial plates, to supply the loss of a central or lateral incisor or a cuspid.

To make a gold crown for such a case we have used the following plan: An artificial *plate tooth*, a little narrower than the space to be filled, is selected, of proper length and character, but the shade will be unimportant. A piece of *pure gold* is taken, long enough to encircle the tooth, and about the one-eighth of an inch wider than the length of the tooth. Two holes are punched into the strip to let the pins of the tooth pass through, and the gold firmly held to the tooth, either by rivetting or by bending the pins against the gold. Now, by means of a laboratory plate burnisher, the soft gold may be intimately burnished to the tooth, when by careful snipping the strip at different points, it is made to closely invest the entire porcelain crown without wrinkling. When the two ends are brought around, they are united with 22 K. solder, permitting this to flow over the joints, the pins, and such parts of the gold as were snipped.

It will not be necessary to invest this while soldering, for even should the porcelain be checked by the heat this will be unimportant.

This is a much easier plan than making a hollow shell crown, and is susceptible to more artistic finish, since the whole contour of the foundation, or porcelain tooth, may be carried out; the narrowness at the neck, the bulge, or any swell, may be repeated by the gold investment. It may be well to state that the cutting edge of the porcelain facing may be made a trifle thinner by grinding, so that the gold tooth may not be *too thick* at this point.

Pure gold, 32 or even 34 gage, will be found plenty thick enough for these cases, and of either of these thicknesses it will be so much the easier adapted.

When the crown is finished, an extension or attachment may be added to it, if the crown be intended for a vulcanite plate, but if intended for a gold plate, such an extension will not be required, as the crown is soldered to the gold plate in the same way as any other porcelain tooth.

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## REPORT OF THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

Reported by THEODORE F. CHUPEIN, D.D.S., PHILADELPHIA, PA.

### TARTARS.

Dr. Roop read a paper on the "Salivary Calculi," and spoke of tooth-brushes best adapted for cleansing the teeth. These were brushes provided with comparatively stiff bristles. The face of the bristles, or that which touched the teeth, were spread apart, and at the points farthest from the handle were longer, so that they could reach the farthest back tooth and insinuate themselves between the teeth. He said that if these brushes were used with a rotary or vibratory motion, the teeth would be thoroughly cleansed. He favored the use of cider occasionally as a tooth-wash, having noticed its beneficial effect.

Dr. Bonsall used only mechanical means for the removal of tartar, and endeavored to leave the teeth, from which he removed the deposit, as smooth as possible. He was disposed to think that the subsequent employment of any acid left the teeth roughened, and in this condition rendered them more favorable for renewed deposits.

Dr. Trueman asked if Dr. Roop recommended the diluted acid vinegar for general use?

Dr. Roop replied that he did not. He recommended it only in cases where there was a decided tendency to a rapid formation of tartar. He used it in the proportion of one part of vinegar to eight parts of water. In this proportion he had found it decidedly beneficial, keeping the teeth in a beautiful condition.

Dr. Bonsall remembered reading of the beneficial effects of butter-milk used as a tooth-wash to keep away the deposit of tartar.

Dr. Keyser exhibited the Wayne patent tooth-brush, which he had found quite efficient, and which he recommended to his patients.

Dr. Trueman asked what is the best solvent, and also, is the soft mass which collects at the necks of the teeth tartar in the incipient stage, which, if left undisturbed, afterwards got hard?

Dr. Roop thought that the soft deposit was not true tartar. It might be composed of the same constituents, but he did not think this accumulation ever got hard.

Dr. Keyser thought that aromatic sulphuric acid, diluted, was the best solvent for tartar. He preferred this because it was more pleasant to use.

#### SOLID GOLD CUSPS.

Dr. Keyser described a manner of forming solid gold cusps. He melted a sufficient quantity of gold scraps to a globule; removing this and placing it in the die plate, he struck it while still red hot a blow with the hammer, which drove it into the depression he had placed it in. If not flattened sufficiently, he removed and reheated it, giving it another blow. The use thus made of the die plate did not seem to injure it in the least.

#### OBTUNDENTS.

Dr. Bonsall spoke of the efficacy of the sulphate of zinc as an obtundent. In his hands it was as efficient as the chloride, with the advantage of not causing the pain which the chloride did.

Dr. Chupein endorsed the statements of Dr. Bonsall, having tried it and found it efficient.

#### AMALGAM.

Dr. Trueman reported some experiments with an alloy made of seven parts of tin and three of silver, combined with different proportions of mercury.

Equal parts of the alloy, with mercury, yielded the best results.

The experiments were made with seven parts of mercury to three of the alloy, and three parts of mercury to seven of the alloy; but equal parts of both yielded the best results. The object of the experiments being to establish the limits of alloy and mercury with these proportions of silver and tin. He stated that alloys could be cast into glass tubes or bottles, such as are used for the shipment of gold cylinders, and in this form the ingot was readily attached to the chuck of a lathe, where it could be turned into shavings, or reduced to filings for use.

It was the opinion of most of the members present that "scrap amalgam," or those parts of the alloy left over, being the surplus of the mix, was improved by remelting. When a quantity of these scraps

were collected from different operations, whether the scraps were the scraps of the same alloy or of different alloys, were placed in the crucible, the heat drove off the mercury. It was important to know when all the mercury was driven off by the heat. Dr. Trueman said this could be ascertained definitely as follows:

When it was seen that the scraps in the crucible were all melted, by taking a hammer with a polished face, about the size of the mouth of the crucible, and holding this over the crucible, if any mercury still remained the face of the hammer would become clouded by the fumes of mercury. By repeating this, until no clouding on the face of the hammer showed itself (wiping off what was previously deposited each time), it could be definitely ascertained if all the mercury had been driven off by the heat.

It was likewise stated that in the use of any alloy which set promptly, should such part of it left on the bracket table set or hardened before the cavity was entirely filled, that it would not interfere with the integrity of the filling, if such hardened part would be added to that which was already introduced and *crushed in*. The second crystallization of the entire filling would make the mass as homogeneous as if it had all been introduced at one time.

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[THIRTY-THIRD PAPER.]

LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

[CAPPING PULPS CONTINUED.]

Q. Were any other treatments suggested for capping the pulp, other than those already spoken of?

A. Dr. I. S. King suggested the use of carbolic acid, mixed to a paste, with the oxide of zinc, placing this in contact with the exposure, or over the thin lamina of bone covering the pulp. The excess of acid being absorbed by gently pressing spunk against it, when the cavity was filled with oxychloride of zinc.

Q. Was there anything noticeable in this treatment?

A. It was noticed that the treatment seemed to result favorably, and that the covering to the pulp prevented the oxychloride of zinc from causing the severe pain, which it invariably did, on being used alone.

**Q.** How strong was the carbolic acid used with the oxide of zinc in this treatment?

**A.** Many used it full strength, but a twenty per cent. solution, used with the powder, was found amply strong.

**Q.** What followed this treatment?

**A.** In 1873 Dr. Craven proposed to hasten the formation of secondary dentine around the point of exposure, by using lactic acid combined with freshly-precipitated phosphate of lime, and drying the cavity thoroughly, this was applied to the point of exposure gently, covered with a few small disks of bibulous paper, and then filled over all with oxychloride of zinc.

**Q.** Was this suggestion attended with any better results than the other?

**A.** Many fine operators adopted the suggestion, and varied the manner of capping in several ways, but the reports were attended with about the same percentage of success and failures. Dr. King's plan was more favorably looked on as yielding a larger number of successes, or, if not these, rendering the tooth thus treated more comfortable in the greater number of cases.

**Q.** Has any treatment looking to this end been since suggested?

**A.** Recently Dr. Stowell speaks with great earnestness, faith, hopefulness and enthusiasm of the effect and use of hydronapthol in such cases. His mode of procedure is to isolate the tooth with the rubber dam. Applying a twenty-five per cent. alcoholic solution of hydronapthol to the cavity, he evaporates the alcohol of the solution with warm air; he then combines the powdered hydronapthol with the oxide of zinc, in the proportion of one part of the former to three parts of the latter, mixing this with the ordinary glazial phosphoric acid of the oxyphosphate cement, he introduces this into the cavity.

**Q.** Has locality anything to do with the success or failure of nerve capping?

**A.** From the reports it would seem this might have beneficial or disastrous success; healthy locations resulting more favorably to the success of the operation and yielding a larger percentage of successes.

**Q.** Have the experiments enumerated been performed on healthy or diseased pulps?

**A.** They have been performed entirely on healthy pulps, recent exposures, or in cases where only a thin lamina of dentine protected the underlying pulp.

Q. Has the treatment been resorted to in cases of long exposure, or after pulpitis has set in?

A. The treatment has been attempted, but in proportion to the length of the exposure, or the violence of the inflammation of the pulp, has the operation been attended with failure or success irrespective of the health of the patient, the locality or the apparent favorable state of the case.

Q. What was the treatment, in cases of exposure of the pulp, previous to the operation of capping?

A. The devitalization of the pulp.

Q. Was the devitalization of the pulp confined to any particular teeth?

A. At first this operation only included the front teeth, or teeth with but a single root.

Q. How was it at first performed?

A. By actual cautery.

Q. Was it practiced to any great extent?

A. The operation was so severe, indeed so barbarous, that few dentists would resort to it, and fewer patients would submit to it.

Q. Is the same operation performed now with less pain?

A. It is. By the means of the combination of arsenic with morphia, cocaine and other local anæsthetics, or by the still more recent suggestion of cataphoreses or electrical osmosis, the death of the pulp is secured with scarcely any pain.

Q. Who suggested the use of arsenic for the devitalization of the pulp?

A. A Dr. Spooner, of Montreal, Canada, in 1835, first used arsenic to destroy the pulp and to mitigate the pain attendant on the cutting of the dentine in forming a cavity in a tooth for subsequent filling, but he did not make it known. His brother, Dr. S. Spooner, of New York, made the discovery known in an excellent treatise, in 1836.

Q. What was the effect of this discovery?

A. All teeth, back as well as front, single or multi-rooted, could be treated for pulp exposure.

Q. How was the operation then performed?

A. At that time only the ganglionic portion of the pulp in the molars were removed. The prolongations in the roots of these teeth were left undisturbed, or, if removed, were left unfilled.

Q. What was the result of this?

A. The decomposition or putrefaction of these remains of organic matter gave subsequent trouble often resulting in alveolar abscess.

Q. Did not these sequences prove disheartening to many operators, or were regarded with astonishment?

A. They were disheartening and could not be accounted for, and many attributed the cause of the sequences to the imperfection of the operation.

Q. Were these reasons really the cause of the failure of the operation?

A. The operation may have been badly performed, but the real cause of the trouble was not then understood.

Q. Who demonstrated this?

A. Dr. Maynard, of Washington, D. C. He not only removed the pulp from the crown of the tooth, but also from the root canals, and these canals he filled, so as to prevent the ingress of all effete matter. This was done a number of years after the discovery of Dr. Spooner of the effect of arsenic for devitalizing the pulp, and it was only then that such teeth were made serviceable and comfortable by filling.

Q. Did the operation, as performed by Dr. Maynard, lead to any other results?

A. It did. The action of the drug was considered and its mode of application improved, both by combining it with other agents to lessen the pain of its action, as well as to the manner of securing it, to prevent its action, except to the point it was desirable to have it act.

Q. What is arsenic?

A. Arsenic is a metal. In its native state it is not used as a medicine, but by roasting the ore a fine white powder is procured which is purified by sublimation. When the ore is heated it emits an odor like garlic, but in the powder it has no odor, and is the more dangerous from being liable to be mistaken for some innocent powder, such as powdered alum, or the bicarb. of soda. In large doses it is a violent irritant poison, but in smaller doses it acts as a tonic and increases the appetite. A very minute quantity is sufficient for pulp devitalization—the one-sixtieth of a grain being sufficient, or a quantity in size as large as the head of a pin.

Q. What do you mean by sublimation?

A. It is a chemical operation by which substances are made volatile by heat, and then condensed again into a solid form. The arsenical ore is made volatile by being heated to redness, when, by the proper apparatus, the vapor is condensed into the solid powder in which we have it for medicinal use.

Q. How does arsenic act?

A. It produces an excitement on the sensory nerves, and afterwards a paralyzing effect, and from its nature, as an irritant, induces violent inflammation.

Q. Is this always its effect?

A. The amount of inflammation is induced in proportion to the quantity used, so that an overdose may defeat the object desired.

Q. Does it invariably produce death to the pulp?

A. The absorption of the drug has been often known to fail, even after the poison has been laid in actual contact with the pulp.

Q. Should arsenic be applied while pain is felt in the tooth?

A. It should not.

Q. What should be done then?

A. The pain should be first subdued and perfect quiet obtained.

Q. How is this accomplished?

A. The cavity of decay should be cleansed of all food, debris, and as much loose decayed dentine as may be removed without inflicting pain; then the application of creosote, chloroform, or oil of cloves introduced as soothing agents, after which a paste made up of acetate of morphia, hydrochlorate of cocaine and carbolic is introduced and sealed in the cavity gently with cotton floss. This may be left in from twelve to twenty-four hours—until all pain subsides—when the arsenic may be applied.

Q. How is this applied?

A. A paste is formed of equal parts of arsenic, acetate of morphia, and powdered hydrochlorate of cocaine, combined with oil of cloves, creosote or carbolic acid. An amount of this paste, equal in size to the head of a pin, is laid in contact—preferably—with the exposed pulp, or, if this be not possible, laid over the floor of the cavity. It is held in place by a concave disk of metal, and over this a larger wad to keep the disk in place.

Q. Are there any precautions to be observed in making these applications?

A. Should the cavity be on the occlusal surface of the tooth, the application will be comparatively simple; but should it be on the mesial or distal surface, the gum at the interdental space should be well cauterized with a little carbolic acid, after which the application is made. The sealing in of the arsenical paste should be made, in all positions, with no pressure towards or against the pulp.

Q. What would be the effect of using an overdose of arsenic for destroying the pulp?

A. If too large a quantity of arsenic be used in the effort to destroy the pulp, the object would be defeated by arousing an inflammation which would prevent the absorption of the poison; if not this, the use of a large quantity might result in its oozing from the cavity, attacking the gum tissue of the interdental space, and thereby causing a dangerous sloughing.

Q. What should be done in case of sloughing from the application of arsenic?

A. The sloughed parts should be freely bathed with "Dialized Iron" in the effort to neutralize the arsenic.

Q. Does the application of arsenic cause pain?

A. It is such an irritant poison that, despite the best effort, pain will be produced, but if the paste be made thick, a minute quantity used, the formula made as above described, and the application made without pressure on the pulp, the amount of pain is reported so slight as to be described as only the least discomfort, oftentimes not even this.

Q. Was not arsenic used considerably, at one time, as an obtundent for sensitive dentine?

A. It was.

Q. Why was it discontinued?

A. Because of its disastrous results in being absorbed by the dentine, and thus causing the death of the pulp with all the accompanying trouble from alveolar abscess.

Q. Do not some operators still use it, and advocate its use?

A. Yes. Dr. Register has found it very serviceable when used in the mild form of "Fowler's Solution," having secured, with this solution, an almost total immunity from pain while excavating the dentine, and with care in its use, having had no disastrous results to follow.

Q. What is Fowler's Solution?

A. Fowler's Solution of Arsenic is a preparation made with arsenic, bicarbonate of potassa, and the compound spirits of lavender, each fluid-drachm of the solution containing about a half grain of arsenic.

Q. What has Dr. Register to say regarding its use?

A. He says: "I have been using Fowler's Solution as an obtundent for more than four years, and have noted no ill effects in connection with its use. I recognize, of course, that it would not do to teach students to use any of the arsenical preparations, as obtundents; but as I am talking to experienced practitioners, I present the subject for your consideration. I do not believe a pulp can be killed by

its use. I have tried it and failed ; moreover, I have never had a case of pulpitis following its use. Of course, an antidote should be applied after using it. I have used Fowler's Solution in double strength (2 per cent.), and filled the cavity with cement, and after weeks, upon removing the filling, have found the dentine sensitive."

Q. How may the effect of arsenic be neutralized ?

A. The preparation known as "Dialized Iron " will check its action, or the powdered carbonate of magnesia is likewise used as an antidote for it.

Q. When pain supervenes from the application of arsenic, is it severe or of long continuance ?

A. Ordinarily it is neither. A dull pain, amounting to discomfort, or a knowledge of its presence, continued, as reported in the largest majority of cases, for an hour or two, generally constitutes its action in the killing of a nerve.

Q. Suppose the pain continue longer than this time, what is the inference ?

A. The inference is that despite the care used in making the application so as to avoid all pressure, the pulp must have been in an inflamed condition when or before the application was made.

Q. How should the patient be instructed, in case the pain continues beyond the ordinary time necessary for the arsenic to paralyze the pulp ?

A. The patient should be instructed to return so that sedative treatment should be used to suppress the inflammation.

[TO BE CONTINUED.]

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### ODONTOGRAPHIC SOCIETY.

Tenth Anniversary of the Odontographic Society (organized 1887), of Chicago, Ill., was held on the 21st and 22d February, 1898.

President, Geo. B. Perry ; Vice-President, G. W. Schwartz ; Secretary, H. H. Wilson ; Treasurer, Edmund Noyes.

Board of Directors—C. E. Bentley, Chairman ; J. G. Reid, W. H. Fox.

Board of Censors—E. K. Bennington, Chairman ; A. G. Johnson, H. J. Goslee.

The announcement came to hand too late for our January issue.  
—[Ed.]

## SELECTED ARTICLES.

## WHERE IGNORANCE WAS NOT BLISS.

BY MALCOLM W. SPARROW, L.D.S., TORONTO.

While reading Dr. Martin's article on "Popular Dental Education," in the May number of your valuable journal, I was convinced of the truth there is in his reference to the ignorance of medical men—not all—who pretend—or shall I say, presume—to diagnose troubles which pertain strictly to the science of dentistry. Not only this, but the readiness with which some M.D.'s undertake the treatment of cases that are entirely out of their sphere—such as the extracting of troublesome teeth, the treatment of alveolar abscesses, *et cetera*, or by telling their patients hobgoblin stories about some maxillary trouble or another, which they do not themselves understand, nor have been taught to understand, thereby rendering it almost impossible for a dentist to remove from the patient's mind the fallacy of the M.D.'s diagnosis—is indeed provoking.

It seems to me that a medical man, without the degree of L.D.S. or D.D.S., ought not to prescribe for a patient suffering from derangement of the masticating organs—unless for temporary relief—any more than a dentist, without the degree of M.D., should prescribe for a patient suffering from a derangement of the digestive organs. It is no more than right that we should be fair with one another at all times. Some medical men, however, will grab at anything which promises a fee, and if the patient suffers through their ignorance of dental science, *messieurs les docteurs* try to justify themselves by declaring the case a most remarkable one, and continuing experimental treatment until some friend of the patient advises him or her to consult a dentist, usually at a time when it is "too late to mend." The medical profession should be a *corps d'honneur* as well as a *corps de guerir*.

All this leads up to a case I have at present, which the result of the M.D.'s ignorance has proven so serious to the patient that I feel justified in my "righteous indignation."

One day, some two years ago, a young woman whom I had often seen in the hotel at which I dine, came into the dining-room with a badly swollen face. Being on speaking terms, I made some jocose remark about the pleasures of toothache, when she informed me, with a satisfaction that piqued my vanity, that Dr. ——— (a distinguished M.D.) was treating her. Being somewhat sensitive, and remembering certain rules of professional etiquette, I said no more. Three

days later I was dining at the same hotel, with Dr. —— (the afore-said M.D.), sitting opposite, when in walked the young woman, with her face so badly swollen that her right eye was almost closed. As she remained out of hearing, I ventured to broach the subject to her physician.

"You are treating Miss ——?" said I.

This may have been cheeky of me, but I felt that I knew Dr. —— well enough to make the query. I may add that the doctor was a practitioner of some twenty years' experience.

"Yes," said he. "It is a very bad case."

"What do you think it is?" said I, growing bolder, and at the same time wondering if the trouble could be some complication of which I was ignorant.

"Well, hem—ah—it is something out of the usual order," said he, with an air of great intelligence.

"Abscess of the antrum?" I ventured.

Now, I do not think it was presumptuous in making this venture, because I believe any dentist would have ventured the same remark, and with considerable less diffidence, perhaps.

"Oh, no; oh, no. Nothing of the kind," said the wise M.D., with great assurance, and not a little hauteur, "it is something very extraordinary; very extraordinary, indeed."

I resumed my soup with a feeling that I had been sat upon.

The patient disappeared. Her physician, however, continued to take his meals, *sans souci*, at the same table with me, and having been sat upon once, I was very careful not to place myself in a position to be sat upon again, therefore our loquacity was exercised over everything but the girl with the swollen face. The next I heard of her she was in the hospital.

Several months afterwards, she came to me to consult about the possibilities of an artificial denture. The condition of her mouth was appalling. From the left central to the right wisdom, the teeth and the alveolus were gone. The soft tissues were in a very angry condition, and there was a most obnoxious discharge of pus. Just then an artificial denture was out of the question. As she was under the physician's care, I told her to continue his treatment until the mouth was in a proper condition, then I would, if she desired, see what could be done for her. I saw her several times, at rather lengthy intervals, but it was not until a few days ago that I was enabled to take an impression. The brief history of the case is as follows:

1. An ulcerated superior right six-year molar, which was neglected until face began to swell.

2. The learned M.D.'s wonderful diagnosis and experimental treatment.

3. Abscess of the antrum, with all its pain and offensiveness.

4. A change of physicians (this man understood the case, but it was too late), followed by several weeks in the hospital, excruciating suffering, loss of teeth from superior left central to superior right wisdom, with continued suffering.

5. Necrosis of alveolus from central to wisdom, which came away in three pieces. I have in my possession one piece of bone which embraces the socket of the right central, lateral, canine, and first bicuspid. I have also a model of the mouth as it is at present.

Last, but by no means least, one year and a-half of treatment and waiting, to say nothing of the annoyance and inconvenience before the wound healed. During this time the patient was at home, some distance from the city, under the treatment of her physician.

The wound is now healed, with the floor of the antrum gone, and a fissure opening through the soft tissue, which permits air and fluids to pass through the nose from the mouth. How I am to succeed with an artificial denture is a problem which just now appears to be something akin to a Chinese puzzle.

This whole trouble, I think, can safely be attributed to the ignorance of the M.D., who was so wondrous wise in his diagnosis. With this example before me, I can heartily coincide with Dr. Martin's statement:

"There are many notable exceptions among the medical profession, but we fear by far the greater majority are sadly, culpably ignorant of the simplest principles of dental conservation."—*Dominion Dental Journal*.

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### A WORD OF WARNING.

BY E. H. BABCOCK, D.D.S., M.D., BROOKLYN, N. Y.

In 1867-68, at King's College, London, Sir Joseph Lister introduced antiseptic surgery. He used carbolic acid solutions for washing the hands of the operator, for saturating all bandages, and as a spray about the site of the operation, and over the hands of the operator and his assistants. As a result, the tissues became saturated with that drug, the operators were great sufferers, while the patients developed all the symptoms of carbolic acid poisoning.

A few years ago, in a public speech, this same great Lister announced to his hearers his regret that he had ever favored the method of treatment that bears his name. Lister's method was extreme. It set men to thinking and experimenting. It taught that cleanliness was necessary for the success of an operation.

When this light began to dawn upon the minds of the general surgeon, what a change came about in the operating-rooms! What was once the dirtiest room in the hospital was transformed into the cleanest. The operating-gown, dark with age and stained with the blood of an hundred victims, gave way to the immaculate white dress, fresh for each operation. The floors, covered with sawdust and filth, glistened like snow under the application of water and brush. And to-day the surgeon enters any cavity of the human body with less trepidation than did the surgeon of old approach the amputation of a finger.

In dental surgery the history of the use of amalgam may serve to illustrate the thought I am desirous of making clear. Its advent was hailed with joy; everybody used it. Then there came a reaction, and no one would admit using it, or that it had any intrinsic worth. To-day, by its intelligent use, the dental surgeon is able to save many a poor tooth that is not "good enough for gold," and would formerly have been consigned to the loving embrace of the forceps.

"I care not what may be the condition of the root; only give me such and such antiseptic and I will fill that root-canal and all will be well." This seems to be the prevailing thought among dentists at the present day, and if it is allowed to go on without remonstrance, it will work great injury to more than one dentist—to more than one patient.

Dentists are thankful for the powerful antiseptics that synthetical chemistry is placing within their grasp. The antiseptics act at once; they overcome putrefactive changes. But does their power never wane?

A chemical battery will develop an electric current. It is active for a time; then it stops—all chemical action has ceased.

These antiseptic agents have a certain amount of stored-up energy. There must be a limit to it; they must in time lose their power.

In teeth with devitalized pulps the organic portions will undergo degenerating chemical changes—putrefaction. Antiseptics have the power of combating that putrefactive action. The less the organic matter to putrefy, the longer will a given quantity of an antiseptic continue to prevent sepsis. Consequently, the more thoroughly

all root-canals and pulp-chambers are cleansed of organic matter, the greater will be the freedom from trouble after root-filling.

To make a long story short, what should be taught in every dental college, preached in every dental meeting, and practiced at every operation for the filling of root-canals, is "mechanical antisepsis."

Thorough mechanical cleansing of root-canals should always precede the use of any antiseptic.—*American Dental Weekly*.

### PRACTICAL PLACE.

#### HYDRONAPHTHOL IN THE TREATMENT OF THE DENTAL PULP, ALIVE OR DEAD.

Dr. S. S. Stowell has read a most interesting paper before the First District Dental Society of the State of New York, on the above subject, published in the *Dental Cosmos*, from which we make some extracts :

"We all know with what fear and dread we have opened into a pulpless tooth of long standing, having no fistula, and what dire results have followed, supposed to be the result of a multitude of hungry microbes rushing into a fertile field. An inflammation is at once set up which is almost unbearable, the quickening pulse and rapid breathing soon indicate high fever, and often for two or three days or a week the patient, whether a robust man or a delicate woman, would be confined to the bed in a dark room, there to writhe in agony until suppuration of the inflamed part takes place, and the pus burrows its painful path through the plate of bone and soft tissues, and finally breaks and discharges.

"In the meantime the physician and dentist have been in almost constant attendance, using all known remedies for such cases, and neither doctors nor medicines have really done any good, other than to encourage and speak good cheer to the suffering martyr, that for all this agony he will still retain the tooth, that it may yet become useful."

Dr. Stowell is particularly earnest, hopeful—nay, even certain—that his treatment is efficacious, as is shown by the next paragraph. He continues :

"We have all been through this experience, either personally, or with our patients, and all have realized how powerless we were with all our drugs to relieve our patients' sufferings. Gentlemen, I make the statement here that when an old pulpless tooth is opened into, if the alcoholic solution of hydronaphthol is at once placed in the pulp canal, the conditions referred to are *absolutely impossible*."

In another place Dr. Stowell gives the solubility of hydronaphthol in different menstrums.

|                     |            |          |
|---------------------|------------|----------|
| In alcohol,.....    | about 1 to | 2 parts. |
| In hot water,.....  | " 1 to     | 300 "    |
| In cold " .....     | " 1 to     | 1,100 "  |
| In olive oil, ..... | " 1 to     | 20 "     |
| In ether, .....     | " 1 to     | 2 "      |
| In chloroform ..... | " 1 to     | 2 "      |

Dr. Stowell uses the hydronaphthol in two forms—the twenty-five per cent. alcoholic solution,\* and the powdered form. In the treatment of roots and antiseptic conditions, he uses the alcoholic solution, "often reducing this with glycerole or water." He continues:

"I will now refer to another use of hydronaphthol, which I have found of priceless value, and so far as my research has extended, I claim originality. I refer to the combination of the powdered hydronaphthol with the zinc oxide of our common oxyphosphate cement. I combine in parts one-quarter of hydronaphthol to three-quarters zinc oxide, mixing this combination with the phosphoric acid and using as any oxyphosphate cement for pulp-capping and for protecting permanently all exposed, sensitive, or soft parts in live teeth, as an antiseptic, non-irritating lining for all classes of fillings. I first bathe the cavity with the alcoholic solution, which penetrates the soft, leathery decay as well as the tooth structure; the alcohol soon evaporates, leaving a deposit of hydronaphthol in the cavity. I now either line the cavity, or fill it entirely with the hydronaphthol cement, which is rendered non-irritant and antiseptic by the presence of the hydronaphthol incorporated into it. I sometimes incorporate a little oil of cloves or carbolic acid into this cement, which acts favorably as a local anæsthetic; with this addition, the foregoing treatment may be applied to a tooth with a pulp slightly or nearly exposed, which has ached some, or may be aching at the time of presentment, with almost positive assurance of successful results, without pain to the patient, who should be instructed to call again, in a few months, for a more permanent filling, when the tooth will be found to be quite free from sensitiveness. The cavity may now be more thoroughly prepared, and a more permanent filling placed in it, lining the cavity again with the combination cement. If, however, the cement is not badly worn, it may be left for a much longer time with still better results."

\* By adding fifty-seven grains of powdered hydronaphthol to one-half ounce of ninety-five per cent. alcohol, a twenty-five per cent. solution will be produced.—[Ed.]

"The addition of the hydronaphthol to the cement in the proportion mentioned reduces its wearing quality but slightly, if it is mixed hard; but as we use the cement quite soft in the treatment of such cases, its wearing quality is, of course, impaired."

\* \* \* \* \*

"I will say that the results thus obtained have been little short of marvelous, as I have taken liberties with hypersensitive and soft teeth by leaving the soft sensitive decay undisturbed in the cavity, treating it as before mentioned, to the delight and comfort of my patient, and assurance to myself that I have put nature at her best to restore the affected part to a healthy normal condition, less the part lost by the first attack of the deadly microbe."

#### LIQUID AIR.

We record in our journal the production of air—"Oxygen and Nitrogen"—in a liquid form, brought to our notice by Prof. Barker, of the University of Pennsylvania. This is no new thing, yet we have no record where its production has been made in such quantities and in such a comparatively cheap process as to permit experimentation.

Prof. Dewar, of Glasgow, produced liquid air, but at a cost of \$2,500 a quart; but it remained for an American, a Mr. Charles E. Tripler, of New York, to perfect a process by which it can be made at a nominal cost.

Liquid air represents a temperature of 320 degrees below zero. A lump of ice thrown into a vessel of liquid air makes the fluid boil, because the ice is so hot next the temperature of the liquid that the heat of ice imparted causes the ebullition of boiling.

It is at this temperature that air becomes a liquid when it is subjected by Mr. Tripler's plan to a pressure of 2,000 pounds to the square inch, sending it afterwards through a coil of pipes, or what is termed "a worm," through openings as fine as a needle. After expanding by this process it cools very considerably, maintaining this temperature.

The liquid air which Prof. Barker experimented with at the University of Pennsylvania was received in an ordinary "milk can" brought from New York. It was not held in iron cylinders as other liquid gases are. It could be ladled out of the can like any other liquid, and mercury and alcohol readily freeze and become solid from the intensity of the cold imparted to these substances.

No application has as yet been made of liquid air, yet it will not be astonishing that it is open to many uses in the arts, and this at the very near future.

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#### REMOVING PULPS PAINLESSLY.

It often happens that upon removing pulps that have had arsenical application, it is found that near the end of the root or roots the nerve is extremely sensitive. This is particularly so in case of molar roots. What is the best method of treatment?

Dr. Beacock's answer led me to try his treatment in these cases. I was quite encouraged to continue experiments. Mix on a slab as many cocaine crystals as a drop of carbolic acid will take up. Keep the tooth dry and convey the mixture to the root canals by means of a few shreds of cotton on a broach. Then, with a new broach of proper size work up the canals little by little. Withdraw the broach frequently, going a little farther each insertion. Generally, after a few minutes of patient manipulation you will have the satisfaction of finding the broach reach the end of the root.—R. E. SPARKS, Kingston, Ont., in *Dominion Dental Journal*.

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#### A USEFUL FLUX.

A flux that is exceedingly useful in bridge work is prepared as follows:

Put in a cup—

|                           |                    |
|---------------------------|--------------------|
| Boracic acid.....         | 1 oz.              |
| Ammonia .....             | $\frac{1}{2}$ oz.  |
| Carbonate of ammonia..... | $\frac{1}{2}$ dwt. |
| Bicarbonate of soda ..... | 2 dwt.             |
| Water .....               | 4 oz.              |

Boil until the fumes of ammonia are no longer given off.

Coat the bridge or other work all over the gold with the flux. Heat it over a spirit lamp to dry it on. Give it another coat, if needed, leaving no part exposed. Then scrape off where it is desired that the solder shall flow, and it will go nowhere else. The work will come out of the heating as bright as when it went in, and the solder will be smooth. The polished surfaces will not be corroded or blackened.—*Western Dental Journal*.

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#### FOWLER'S SOLUTION AS AN OBTUNDENT.

I have been using Fowler's solution as an obtundent for more than four years, and have noted no ill effects in connection with its use. I

recognize, of course, that it would not do to teach students to use any of the arsenical preparations as obtundents, but as I am talking to experienced practitioners, I present the subject for your consideration. I do not believe a pulp can be killed by its use. I have tried it and failed; moreover, I have never had a case of pulpitis following its use. Of course, an antidote should be applied after using it. I have used Fowler's solution in double strength (two per cent.) and filled the cavity with cement, and after weeks, upon removing the filling, have found the dentine sensitive.—DR. REGISTER, in *International*.

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#### FORMALIN—CEMENT ROOT-CANAL FILLING.

##### Powder :

|                        |     |
|------------------------|-----|
| Calc. of sulphur ..... | 200 |
| Hydrarg. bichlor. .... | 4   |
| Mix finely.            |     |

##### Liquid :

|                     |     |
|---------------------|-----|
| Acid sulphuric..... | 32  |
| Formalin .....      | 100 |
| Aq. distil.....     | 100 |

Rub up a few drops of the liquid with sufficient of the powder to form a paste, which, introduced into the previously dried root-canal, solidifies in a few minutes. Fill crown cavity as desired. The small quantity of corrosive sublimate and sulphuric acid in the paste does not have any discoloring or corrosive effect on the tooth.—ABRAHAM, in *Zahndrztliches Wochenblatt*.

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#### MODELING COMPOUND DAM AND MATRIX.

There is difficulty sometimes in damming three or four teeth for cataphoric treatment. I select a crown impression tray and take an impression where I want to dam the teeth; remove it, cool it, take the modeling compound from the tray and carve away the top of the impression. When replaced in the mouth this leaves a well around the cavities, and then I put the saliva pump in the mouth and relieve overflow of saliva. I use this in preference to napkins, where I cannot use the dam. The adaptation is so close that there is seldom any leakage. This is applicable to cataphoresis and all other treatments.—DR. VAN WOERT.

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#### NEW METHOD OF ARTIFICIAL RESPIRATION.

Calliano (*British Medical Journal*) describes a new method of artificial respiration, which he has practiced successfully in cases of

asphyxia. Place the patient in Sylvester's position, draw the arms up so as fully to expand the thorax, and fix above and behind the head by tying the wrists together. Respiration is then produced by simply pressing with the hands upon the thorax some eighteen or twenty times a minute. The advantages claimed for this modification of Sylvester's method are its greater simplicity, the smaller amount of labor required and lessened fatigue of the operator; the absence of danger from contusion of the shoulder-joints, and the ease with which such a method could be taught to and practised by uneducated and untrained people.—*Dietic and Hygienic Gazette*, February, '97.

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#### CHLORIDE OF ETHYL SPRAY HÆMOSTAT.

Directed into the alveolar cavity will stop severe hemorrhage after tooth extraction. The cavity should then be filled with cotton wet with tincture of hamamelis.—*Gaz. Med. de Liege*.

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#### TO POLISH ALUMINUM.

Gray or unsightly aluminum may be restored to its white color by washing with a mixture of 30 gm. of borax, dissolved in 1000 gm. of water, with a few drops of ammonia added.—*Amer. Druggist*.

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#### WARM SOLUTION FOR LOCAL ANÆSTHESIA.

If the solution of cocaine is warmed before using, its anæsthetic effect is more rapid, more intense and more lasting.—*Lancet Clinic*.

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#### BEE STING.

It is reported from France that the fresh juice of the poppy plant applied to recent bee stings gives immediate relief and prevents inflammation.—*Welsh's Monthly*.

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#### HÆMOSTATIC MIXTURE.

Antipyrine in powder, added to the alcoholic solution of tannin, forms a sticky, gummy mass which, applied on cotton or sponge, arrests hemorrhage effectually.—D. R. PARK.

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#### AN ELECTRICAL HÆMOSTAT.

Mr. Lawson Tait has just added to his list of valuable contributions to surgery. His latest invention is an electric hæmostat, an in-

strument in which a current of electricity is utilized for the arrest of bleeding. The fact of the coagulation of albuminous tissues at 180 Fahrenheit has made this instrument possible, and it takes the form of a platinum wire enclosed in a pair of forceps, the wire being insulated in burned pipe-clay. When an artery is seized by these forceps and the current turned on further bleeding is prevented by the agglutination of the walls of the artery, which effectually prevents a further flow of blood. This invention has succeeded in a great number of cases.—*Brit. Jour. Dent. Sc.*

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#### CLEANSING PASTE FOR THE HANDS.

A. C. Hewitt says: To half pound pulverized borax add one pound carbonate of soda and half pound fine pumice, with sufficient glycerine to form a paste. Use in place of soap to cleanse and whiten the hands.

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#### TO FORCE MEDICAMENTS THROUGH DEAD TEETH WITH FISTULOUS OPENING.

Place a pellet of soft, unvulcanized rubber in the tooth cavity; thrust the needle of a hypodermic syringe through the rubber pellet, holding the latter in place. This is superior to, and cheaper than, an abscess syringe.—J. E. DAVIS, in *Ohio Dental Journal*.

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#### CASTOR OIL EXTERNALLY.

Castor oil heated and thoroughly applied to the abdomen, in children, will often move the bowels as effectually as when given internally.—*Southern California Practitioner*.

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#### COCAINE ANÆSTHESIA.

The anæsthetic effect of cocaine is materially increased if the liquid be slightly heated (90° F.) before injecting. Anæsthesia sets in sooner, lasts longer, and is more decided. A weaker solution than usual may be employed, with consequent less risk of cocaine poisoning.—*Dental Digest* (trans. from German).

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#### GELSEMIUM FOR COLD IN THE HEAD.

Gelsemium, says Dr. Loftus, is the most valuable drug known for the relief of the unpleasant condition known as "cold in the head."

When commenced promptly, quick and early, one-drop doses of the fluid extract, administered hourly, usually secure satisfactory results.—*Popular Science*.

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#### A NEW LOCAL ANÆSTHETIC.

Dr. Pize has discovered a new anæsthetic. He has found that by injecting guaiacol under the skin in small doses, operations can be performed without pain. A committee appointed by the Academy of Medicine has inquired into the value of the discovery and has congratulated him upon his achievement.—*Dental Practitioner and Advertiser*.

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#### A NEW METHOD OF POLISHING VULCANITE PLATES.

Dr. J. A. Craig, of Macon, Miss., recommends the following method of polishing vulcanite plates. He saturates the cone with chloroform and cuts the plate smooth with pumice. He then uses a soft cloth dipped in spirits of ammonia, rubbing the plate until the surface is hardened and the color restored, the chloroform having a slight bleaching action. Finally he secures his last finish with a very soft cone and soapstone. If the plate should be too thick in the first place, he says that it may be readily cut down with the chloroform and pumice, and he believes that all who try his method will adopt it permanently.—*Items of Interest*.

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#### NEW METHOD OF BANDING LOGAN CROWNS.

Dr. A. J. Rust, of Chicago (205 Masonic Temple), describes a unique method of banding a crown. In case further information is desired, the doctor expresses a willingness to supply it by correspondence. He describes his method as follows:

"First, adjust the band to the root, and crown in the ordinary manner. Then with a fine stone remove the glazing from that portion of the crown which is covered by the band, and paint this surface with the prepared gold used in China decorating, and burn it into the porcelain; then readjust the band and solder the two together.

"I use a common blowpipe and a small platinum muffle of my own construction, lined with asbestos cloth to prevent the tooth from being heated up too quickly. When I have finished firing, I remove the muffle and tooth to a small box partly filled with dry pumice, to allow of cooling very slowly. If this is carefully done there is no danger of checking the crown."—*Items of Interest*.

THE

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## IMPRESSION MATERIALS AND TAKING IMPRESSIONS.

BY T. F. CHUPEIN, D.D.S., Philadelphia, Pa.

At one time I thought that plaster of Paris was the only material fit to take an impression of the mouth. I regarded it as the *sine qua non* for this purpose. So wedded was I to this material that Dr. Staples, of Texas, criticised me as "*An all plaster crank.*" My faith in plaster has not produced a *total* revolution by any means, but I must admit that in edentulous mouths, both upper and lower—especially the latter—Modelling Compound yields an impression, a model from which is vastly superior to an impression taken with plaster of Paris.

But in the use of Modelling Compound the case must suit the material. Wherever the mouth is at all flabby, the front part of the gum soft or flaccid, no adhesion can be obtained from a model of such a case when taken with plaster of Paris. These soft parts *must* be pressed by the plate, as they are pressed by the impression. In the lower jaw, too, we know that it is next to impossible to obtain an impression of the gum which lies next the roots of the tongue, on account of the integuments which fill the mouth at these places. By the use of an impression tray, such as has been devised by Prof. Henry J. Dorr, and illustrated by Fig. 1., these parts are readily obtained and correctly taken.

To use Modelling Compound, the tray should be heated so that the material will adhere to it. The material should be made very soft in hot water. It should be worked in the hands while soft so as to deprive it of all adherent water. It should be laid into the tray smoothly, all creases, folds and ridges obliterated. It must be soft throughout, with no lumpy or hard places. No more material should be placed into the tray than is just sufficient to take the impression; calculating this by the manner the tray fits the gum on which the material is to be pressed. Before inserting it into the mouth, the surface should be passed over the blaze of the spirit lamp so that it pre-

sents a glazed, semi-fluid, or semi-melted appearance. The material should be hot, but not hot enough to burn. This is best determined by placing the tray next your own cheek, when, if found too hot to be borne by your own cheek, it will be too hot to be borne by the patient.

In taking an impression of a lower gum, the tray is passed in sidewise, in such a way that the lips will not have to be pulled too violently to get the entire tray into the mouth. Once into the mouth the tray should be brought down steadily on the ridge of the jaw with the handle of the tray on a line with the centre of the mouth.

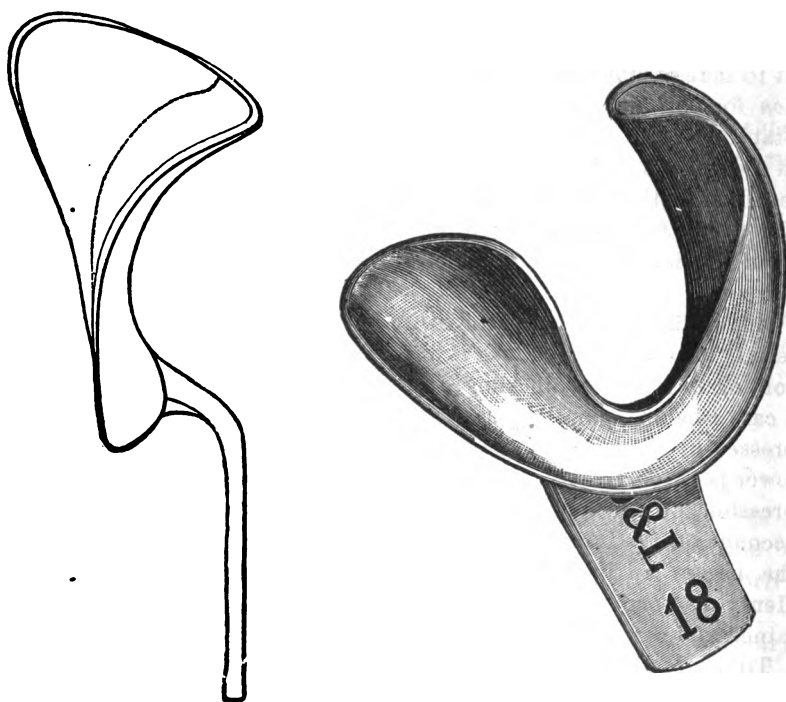


FIG. 1.

The position must not be changed. It is *held in place immovably* until the material hardens. The material should be so hard, before any attempt is made to remove it from the mouth, that any exuding portion of it will refuse to take an imprint from the finger nail. When it is brought down on the edge of the jaw, as above described, should there be any idea that the cheek, or integument of the cheek, on either

side, have folded beneath the material, the tray should be held firmly in place with the fingers of both hands—the operator standing on the right *and rather in front of the patient*, while the assistant passes his finger on each side, lifting these integuments away from under the material. This should be done *at once* before there is any chilling or hardening of the material. The material may also be pressed next the gum *at the roots of the tongue* should any exude beyond the tray ; but as the tray is especially designed to take care of these parts, this will rarely be necessary. With this material there will rarely be any of the folding of the integuments of the cheeks that we have spoken of. This folding is more apt to occur at these places with plaster impressions than with Modelling Compound impressions. When the impression is removed from the mouth it should be thoroughly hardened by pouring cold or iced water over it. In placing the material in the tray, any excess of it is best removed by snipping the excess off with a pair of scissors.

In taking an impression of the upper gum, the same rule is used for this material as for plaster of Paris, namely, the back part of the tray, near the soft palate, is carried to place first and the forward part afterwards. The cup is held steadily and immovably in place with the fingers of the left hand pressing on the tray at the palatal vault as well as on the ridge in the region of the bicusps, while the fingers of the right hand lift the lips so as to permit the material to be pressed on the buccal parts of the ridge, as well as to exclude all air between the material and the gum. In this, as in the other, the material is permitted to get perfectly hard before removal, and is to be chilled as the other was. An impression of this material will adhere to the gum just as firmly as one of plaster of Paris, but this, though often, is not an invariable sign of a perfect impression. On removing the impression from the mouth, should any *streaks or ridges* be noticed on the impression in the neighborhood of the vault, such an impression may just as well be discarded, as a plate made from it will fail to adhere. The impression should be *smooth at all points*, indicating an even pressure of the material at all parts of the mouth.

When the mouth or gum *is firm at all points*, plaster of Paris is the material to be used. For partial impressions, also, nothing approaches plaster of Paris for correctness or reliability ; and for crown or bridge work, plaster of Paris is the only material “ *par excellence* ” which yields certain results.

In *crown work* we have lately had excellent results by a combination of Modelling Compound and plaster of Paris. Dr. Lennox, of

England, first suggested this. A small funnel-shaped receptacle is easily made by bending a piece of thin German silver plate, as is shown by Fig. 2, and soldering at the laps. After the root end is prepared, the root canal reamed out, and the dowel fitted, this little funnel is filled with Modelling Compound.



The compound is brought up to a cone, and the dowel is pushed through to the full extent that it enters the root, as shown by Fig. 3. The material is now softened, the

dowel is entered into the canal and carried up to its full length into the root canal. The little funnel is then pressed up against the face of the root; the material pressing away the gum around the root end and yielding a very sharp impression of it.

After this Modelling Compound impression of the root end has hardened, it may be removed, and all excess trimmed away, which may be readily done with the sharp blade of the penknife. It is then returned to position and plaster of Paris put into the tray and a plaster impression taken with these little funnel devices in place, so as to obtain the position of the adjoining teeth. A piece of tin plate bent into shape like Fig. 4 answers admirably as impression trays for such cases.

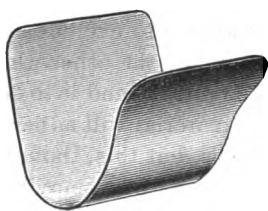


FIG. 4.

This mode has advantages over the all-plaster impression for such cases, because as the plaster is introduced into the mouth quite soft, it fails to force the gum away around the root end, and hence does not give as good a model to work by as when done by this combination of materials; besides this, the Plaster is very apt to break in the interdental spaces, where it is very thin, and on this account does not give a perfect impression.

Fig. 5 represents an impression taken with these little funnel devices and with these combinations of materials, and Fig. 6 represents a model made from such an impression.

The making of these little funnel devices is a very simple operation. A piece of hard wood like a lead pencil is placed into the lathe chuck and the end brought to a point as shown by Fig. 7. A thin piece of pattern lead is bent neatly over the point, yielding a pattern, as shown by Fig. 8. This pattern is laid on a piece of German silver plate, 35 gage, and with a sharp point its form is scribed on the German silver plate. It is then cut out according to the traced lines

and bent over the point of the wood pattern, Fig. 7. The edges are slightly lapped and soldered, and this completes the operation, yielding a little funnel, as shown by Fig. 2.

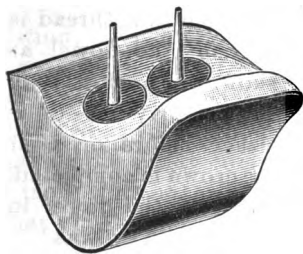


FIG. 5.

It will be noticed that the patterns, Figs. 7 and 8 have marks in them; this is to give the size of the funnel to be made. Pattern number 1 being made on mandril number 1; pattern number 2 on mandril number 2, and so on. Four sizes of these little funnels will

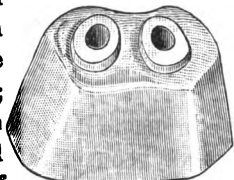


FIG. 6.

be found sufficient for the largest and smallest roots. Should the space between the teeth be too narrow to admit the funnel, it may be *flattened* by squeezing it between the fingers so it will pass into place.

German silver, 34 or 35 gage, will be amply thick to make these little devices.



FIG. 8.

FIG. 7.

It will sometimes be found that the gum of the interdental space is so tough that the Modelling Compound fails to press it away. In such a case we have used the following plan: A thin piece of German silver plate, about 30 or 32 gage, and one-thirty-second of an inch wide is bent around the root end, and drawn tightly by means of a pair of flat-nose pliers. The ends are soldered, and a yoke is soft soldered to the band, as shown by Fig. 9. This appliance is then placed over the root, and an impression is taken with plaster of Paris. The yoke engages in the plaster and brings the band away in the impression. Fusible alloy is cast in the plaster impression, and the fitting of the gold band or gold crown is thus rendered simple.

There is, on the market, a pair of flat-nose pliers designed for cutting a screw on the dowels of crowns, the better to secure the crown in the root, when either cement or gutta-percha is used for this purpose. Such a pair of pliers may be easily made by any dentist, as follows: A pair of flat-nose pliers are obtained like Fig. 10. The temper is taken out of the noses by heating red hot. Holding the noses tightly together by pressing the handles together, a small hole is readily drilled between the noses, about one-fourth of an inch from the end. A screw thread



FIG. 9.

is then cut in this hole, when the pliers are retemperd. By placing the tapered dowel in this threaded hole, within the nose of the

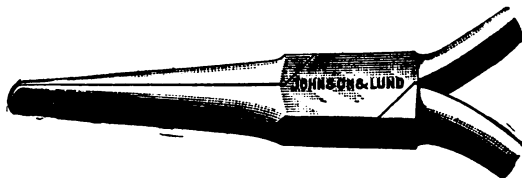


FIG. 10.

pliers, and backing the dowel out, a thread is cut on the dowel as shown by Fig. 3. This may be done either before or after the crown is completed.

We prefer to do it after. By roughening the end of the dowel in this way, considerable support is gained in inserting such crowns.

### CONSERVATION OF TOOTH TISSUE IN PREPARING CAVITIES.

BY WILLIAM H. TRUEMAN, D. D. S.,\* Philadelphia, Pa.

The title of this paper was suggested while looking on at a clinic given before the Pennsylvania State Dental Society many years ago. The tooth to be operated upon was an upper cuspid standing alone. It had previously been filled on each approximal surface; the fillings were both somewhat impaired by the natural wearing down of the tooth tissue bringing to bear upon them more pressure, and at other points than were calculated for when the fillings were inserted some years before, and it was decided to remove them, and to build up the tooth to contour. In the first place, the two fillings were removed, all discolored tissue excavated, and the cavities approximately shaped. The next step was to secure anchorage; to accomplish this, the two cavities were made one by cutting from the lingual surface; this also gave better access to the pulp canal. Next, all weak edges were removed, and all tooth tissue that interfered with ready access to the cavity, then the tooth was ground so as to allow a sufficient thickness of gold at all points between the tooth to be filled and the antagonising tooth, and the edges so prepared as to permit malleting the gold over them. By the time that the tooth was pronounced ready for filling, there was but little more left than a fairly good root; it is not too much to say that scarcely half the tooth tissue present when the operation was begun was there when it was finished. Then began the tedious operation of replacing this lost tissue with gold, carefully packed by the electric mallet. After about five hours' hard

\* Paper read before the Pennsylvania Association of Dental Surgeons.

work, it was almost completed, utter exhaustion of both operator and patient compelled an adjournment. When completed, it was a beautiful operation, the *presumed* natural size and shape of the tooth being fully restored. I saw it again some year later, in excellent condition, the patient, a manufacturer of a gold foil admirably suited for use with the electric mallet, was very proud of his gold tooth. I thought then, and have thought since, whether two gold fillings, inserted as those which were removed had been inserted, would not have more surely compassed the useful preservation of that tooth with a mere tithe of the cost and the labor expended upon it. Admitting that after a service of ten years they would have to be removed and new ones inserted on the same general lines, there is no question but that it could be done, and perhaps done again, without any greater loss of tooth tissue than was sacrificed to make at the time a filling supposed to be permanent, but which would be considered to have done fairly well if it remains useful a dozen years. These thoughts have been recalled, of late, by the remarks of some of our more advanced operators, advocating radical measures for treating, especially the approximal surfaces. We are told to first remove all carious tissue, then all infected tissue, then to carry the excavation well down root-ward, so as to make the cervical border of the filling well beneath the gum margin, all weak edges are to be removed, the tooth to be cut away so that nothing but gold will appear upon the approximal surface. To secure anchorage, the cervical edge is to be formed into a step; a little nearer the incisive or occlusal edge another step is to be formed, and finally, the filling is to be extended sufficiently far over the crown to resist any tilting-out tendency. How much tooth tissue is left after this has been done upon each side of an average bicuspid tooth? What certainty have we that by this means we can better defeat the destructive agents causing caries? What evidence that this will prolong the comfortable usefulness of these precious organs? The mere fact that the advocates of these extreme radical measures are constantly changing their methods is sufficient evidence that their sure and certain instructions of a few years ago have proved faulty.

There is something very taking in the expression *permanent*; we all desire that our operations shall last a lifetime; never come out, and perfectly preserve the tooth as long as the patient lives. The desire to accomplish this is very commendable. There is, however, more to be considered than the actual retention of the filling. There are limitations to that which *can* be done, and ample room for a wise judgment in deciding, in each case, what can be done, what *we* can do,

and what is *best* to be done. It is here that experience has its great value, and in deciding the matter our personal experience must ever have its full weight. It is useless to insist that all teeth are equally strong, and are equally able to resist the destructive agents which surround them, and to insist that all teeth are able to receive any filling we wish to insert, to one who during a long course of practical work has found them otherwise. It is no answer to this to assert that the teachings of science are infallible, while the teachings of experience are warped by inability and desire. We read too often the enthusiastic declarations that some new method has overcome the defects of the past, and made certain and sure the arrest of dental caries, and again and again, of improvements to this sure method rendered necessary by its failure to accomplish the much to be desired object. The problem of arresting caries and protecting human teeth from those agents constantly at work to compass their ruin cannot be solved in the laboratory alone; it is too complex, and involves too many uncertain factors to be reduced to an exact science and taught by rule. We may safely say, that no two mouths are exactly alike, and no two sets of teeth are exposed to exactly the same conditions. We may also say, no two operators tread exactly in the same steps, each, if thoughtful and observing, develops an individuality of his own, and finds for himself, the, to him, best way of meeting these constantly varying conditions. The teachings of science are suggestive, and suggestive only.

I hold that a tooth is a precious thing, and that tooth tissue is worth much more than its weight in gold, and feel, when removing it for any cause, that I am taking from the patient that which I cannot by any means restore. I have not as yet overcome an oppressive weight of responsibility assumed the moment excavator, chisel, wheel or burr, passes from carious to sound tooth tissue. While we are beyond question justified in removing a little that we may save much, I very much question the wisdom of the extensive removal of tooth tissue in the effort to secure permanency; especially so when we consider that the term permanent is merely relative. It is well, I think, to remember, that while a filling may be renewed, in whole or in part, the return to the tooth of a single atom once removed from it is an impossibility. We should, therefore, be very sure that the removal is necessary, and have good grounds upon which to base our belief that the sacrifice of a part is likely to prove the salvation of the rest. The preparation of approximal cavities of bicuspid teeth has recently received from the more radical members of our profession a

large share of attention, and I have watched with keen interest how, as time passes, they have modified their teachings. A little while ago we were instructed that in all cases the contour of these surfaces should be fully restored, even exaggerated, and so built out that while in close contact at the occlusal surface, a free space should be left at the gum margin to prevent capillary retention of the buccal secretions. This, however, was found objectionable, and we were directed to so build out the gold that it and the gum tissue should fully occupy the interdental space. This in turn failed to fully meet the supposed requirements, as, in a little while, the natural shrinkage of the gum, which usually takes place as we approach and pass beyond middle life, left a space more objectionable than resulted from a less contoured filling.

These fillings failed at the cervical margin, owing, it was said, to the gold not being carried far enough beneath the gum margin to make this admittedly weak point occupy a position where it would at all times be protected; and we were now told to press the gum tissue down to a point beyond that which it would occupy, naturally, when the shrinkage incident to advancing years should take place. Now, who can tell where this is going to stop, short of the apex of the root? Before, however, it was well settled how far this should be done, a variety of problems presented. Dr. Williams presented the result of his investigations which seem to show that decay is started by a microbic fungus finding lodgment upon secluded portions of the teeth, and seemed to offer an explanation of recurring caries at this cervical margin, for, arranged as it generally was, a point was left that seemed to favor this fungus growth. To meet this advance in accurate knowledge, or supposed accurate knowledge, we are instructed to still farther cut away the tooth tissue so as to make the gold extend not only well beneath the gum, but to encroach upon the buccal and lingual surfaces so far as to bring the junction of the gold and tooth tissue to a point where the attrition of the food, etc., shall practically prohibit this fungus forming any permanent lodgment. All this, of course, removes a portion of tooth tissue that formerly was depended upon to assist in retaining the filling; it also brings the cervical margin of the filling to a point where there is but little space between the outer periphery of the tooth and the sensitive zone of the tooth pulp; so, the seat of the filling at this point must necessarily be narrow, too narrow indeed to be at all safe. To overcome this, one or two additional seats are to be cut nearer to the occlusal surface, and to still farther anchor the filling and to enable it to resist the additional leverage entailed by this arrangement, it is to be carried well over the

occlusal surface. More than this : it is well recognized that gold, however well and solidly it may be impacted, to retain its position when subjected to the constant strain of mastication, must possess a certain thickness or mass. Therefore, to permit this much, tooth tissue must usually be removed from the occlusal surface of the tooth, to be replaced with gold. Indeed, I recall one writer's remark, suggesting, ironically, that after the tooth had been prepared for filling by fully carrying out these instructions, it was a question whether to fill or cover up the tooth with a gold shell crown ; the latter would, in many cases, undoubtedly prove the most lasting.

Now, are we justified in sacrificing so much tooth tissue ? Do we by so doing prolong the comfortable usefulness of the tooth ? Would it not be better to cut away less, even when by so doing we may risk having to refill after the lapse of some years ? May we not, as I have before suggested, in many cases refill several times, meeting at each new filling and providing for the constantly changing conditions of the teeth and their surroundings, and have at the end a much better and more useful tooth ? May not these repeated fillings hold the tooth much longer than one of these master-pieces of operative skill and patient endurance, which when it does break down leaves nothing but a wreck ? Is it not, indeed, far better to select some filling material that can be inserted without removing frail walls, that does not call for so much working room, and that tasks far less the manipulative skill of the operator and the endurance of the patient ? I know what it is to sit in a dentist's chair from half-past eight o'clock in the morning until five o'clock in the afternoon, listening to the click, click, click, of the electric mallet. I know what it is to thus spend twenty-four hours out of a possible ninety-six, on four successive days, having replaced with gold dentine, which I now think was injudiciously cut away from four upper incisors teeth, two of which failed within ten years, leaving roots exceedingly difficult to crown, sacrificed, I may safely say, to a skillful operator's firmly settled and conscientious belief that well impacted gold was stronger than dentine. I now have, in as good condition as when it was first filled by a gentleman now present, twenty years ago, a bicuspid tooth, as comfortable and effective as though untouched by caries. It has been kept so by repeated refillings with gutta percha, and I question if all the time spent upon it during that long period would suffice to simply prepare it to receive a gold filling according to the more advanced ideas.

In conclusion, permit me to ask the question ; Are teeth best preserved by sacrificing their substance to replace it with another en-

tirely foreign to them, or by, as far as possible, selecting a filling material, and method of operating that calls for the least possible loss of tooth tissue? Do we best compass the desired object by aiming at permanency, or by meeting the conditions as we find them, leaving for the future such attention as the future may require?

## THE DIGESTIVE ORGANS.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

The subject which I have selected to read before you to-night may not be one appertaining to a dental society. My object, however, in presenting it is to embody some views contained in the commencement of the digestive tract—namely, the mouth and the saliva—which I do not know of having been alluded to by physiologists.

The alimentary canal in man is from twenty to twenty-eight feet long. It begins with the mouth and ends with the anus.

In the head we find seven openings—namely, “two eyes,” “two ears,” “two nostrils” and “the mouth,” in the rest of the body but two more, “the urethra” and “the anus.”

The mouth, the beginning of the digestive tract, is the most important and complex of those openings. It is closed on the outside by the lips, covered on the inside by mucous membrane and gum, having the tongue for the floor, the palate, or roof of the mouth, for its upper boundary, the pharynx at its posterior wall, which communicates with the œsophagus in front and the larynx behind, etc., etc. With the tongue, teeth and palate words are enunciated, and sentences formed so that our thoughts and ideas may be expressed and conveyed to our fellow man. Besides this, the mouth contains the teeth for the comminution of the food, and the saliva to form it into a pasty or creamy mass fit to be swallowed, the tongue aiding in this, while the act of deglutition is also performed in the mouth by the aid of the tongue, cheeks and muscles of the pharynx. In the mouth, too, we find the nerves of taste, by which articles of food or medicines are either pleasant or disagreeable. Nearly all the indications of disease are found in the mouth, and recognized by the condition of the palate, tongue or mucous membranes. In short, the mouth is the most wonderful piece of mechanism, imbued with the widest ranges of sympathies, functions and uses.

The parts of the digestive organs taken separately are the mouth, the pharynx, the œsophagus, the stomach, the small intestines (which are subdivided into the duodenum, the jejunum and the ileum), the

large intestines (which are subdivided into the cæcum, the colon and the rectum).

The word mouth signifies an opening, an outlet, as the mouth of a vessel, the mouth of a river, the opening or entrance to a cavity, etc., etc.

Digestion is derived from the word "digere," meaning "*to dissolve*;" and in physiology consists of the change to which the food is subjected as it passes along the alimentary tract.

The acts of digestion may be divided into six stages, namely: *Prehension*, or the seizing of the food; *mastication*, or the grinding up of the food by the teeth, the more thoroughly to mix it with saliva; *insalivation*, the process by which the food is mixed with the saliva; *deglutition*, the process by which the food is formed into a ball by the manipulation of the tongue and swallowed; *gastric digestion*, the process by which the food is churned, tumbled about and thoroughly mixed with the gastric juice of the stomach; and *intestinal digestion*, the process by which the food is still further acted on by the secretions of the liver, pancreas and intestinal secretions, and there taken up and formed into blood.

Physiologists hold that there are *two* kinds of digestion, one of the stomach, and the other of the intestines; but, strictly speaking, I consider there are *three*, one of the mouth, the second of the stomach, and the third of the intestines.

By mouth digestion, I believe that the food, well and thoroughly masticated, ground to the minutest particles, and then so well mixed with saliva as to reduce it to a creamy or semi-liquid mass before it is passed into the œsophagus, and thence into the stomach, render these the very first processes of digestion, by which the teeth and fluids of the mouth play the primary part. We find a substantiation for this belief in the French saying: "*Le mangé bien maché est déjà demi digere*," which means "food well chewed is already half digested." But we hold also that there is as much importance to thorough insalivation as to thorough mastication. The one cannot be carried out without the other, and this is substantiated by the "indigestion" which is produced, in so many, by the "bolting of food," swallowing it before it is chewed and before it is insalivated. This throws extra work on the stomach, forcing it to do not only its own work, but the work of the teeth and salivary glands as well.

It is not, therefore, astonishing that this over-worked organ—the stomach—breaks down and leaves its victim a prey to all the discomforts of dyspepsia. For even though the stomach is made to do the

work of the teeth and salivary glands, there is a difference in stomach digestion to that of mouth digestion, which the stomach cannot perform without the preliminary acts of mastication and insalivation.

The same way that the food is changed in composition by gastric digestion in the stomach, by the chemical action of the secretions of that organ, to prepare it for still further solvent action before it is admitted into the intestines, so is it prepared by the action of the saliva in the mouth before it is fit to enter the stomach.

The glands of the mouth are liberally supplied with nerves, and the irritation of the food in the mouth forces a liberal secretion from them. The viscous fluids flow in great abundance, so that it is estimated that from five to six ounces of saliva are secreted at a meal. These fluids, from the various glands, must contain elements which fit the food for its entrance into the stomach.

We find that there are *three* glands which pour saliva into the mouth. The parotid, the submaxillary and the sublingual.

*The parotid gland* is the largest of all the salivary glands. It is thus named because it is situated *near the ear*. The weight of this gland varies from one-half to one ounce. The saliva from it finds its way into the mouth by means of a duct, tube or conduit, which is two and a half inches long, and is called the duct of Steno, in honor of Nicholas Steno, a Danish anatomist, who discovered it; opening by means of a little mouth situated on the inside of the cheek in the neighborhood of the first and second upper molars.

*The submaxillary gland*, the next largest, weighs about two drachms, and is irregular in shape. It is thus named because of its being situated *below the maxillary bone*. The secretion from this gland finds its way into the mouth by a duct, two and a half inches long, named the duct of Wharton, also in honor of its discoverer, Thomas Wharton, an English anatomist.

The smallest of the salivary glands, *the sublingual*, is thus named from its being situated *beneath the tongue*; the word "lingua" in Latin signifying tongue. The gland is shaped like an almond and weighs about one drachm. The ducts may be distinctly seen, in the shape of two little tubes on either side of the "frænum," or cord of the tongue. The saliva from this gland finds its way into the mouth by the duct of Bartholdi, in honor of the discoverer, who was a Swedish physiologist.

But why should there be three salivary glands? Certainly one could have been made to yield the necessary quota of saliva; hence

the thought arises that there must be some use for three glands, otherwise they would not be there.

Nature is not poetic. Nature is entirely utilitarian. If three glands empty saliva into the mouth, why should there not be a difference (small though it may be) in the character of the saliva which each gland secretes?

We have analysis of the saliva, but our analysis consists of an examination of the saliva as it is found in the mouth. No means have been devised as yet, so far as we are aware, to obtain the saliva secreted from *each particular gland*.

It is admitted, however, that all kinds of starchy food are dissolved and turned into glucose or starch-sugar by the action of the saliva on materials of this kind. Hence this proves "mouth digestion."

But these thoughts seem to find a verification in the deductions of Prof. Van Denburg. For some years there has been a dispute whether the bite of the gila is poisonous or not. In a lecture before the Academy of Natural Sciences, at San Francisco, the above authority stated that the saliva of the lower jaw of this monster is poisonous, while that of the upper jaw is not. While one would produce death, the other would not. If these deductions be correct, it would seem that there is a difference in the saliva secreted from one gland from that secreted from another. Therefore, we contend that the food is subject to *three digestions*, one of the mouth, one of the stomach and one of the intestines; and that there is an influence of the saliva from each gland on the food while it is being subjected to trituration by the teeth, and insalivation from the glands.

With these thoughts we now continue with a consideration of the digestive organs as it proceeds regularly.

When the food is taken into the mouth and is chewed and formed into a bolus, it first passes into the pharynx. This is a muscular pouch at the back of the mouth communicating with the œsophagus. The œsophagus derives its name from the Greek language, signifying "a carrier or conveyer of food." The œsophagus is a cylindrical tube about nine or ten inches in length which pierces the diaphragm and enters the stomach at a point called the "cardiac opening," because this opening is *not far from the heart*. The stomach is an enlarged pouch, larger at the point near the heart and smaller at the point where it communicates with the small intestines. The stomach is a pouch or reservoir about twelve inches long by four or five inches in diameter. The œsophagus connects with the stomach by the cardiac opening, while the stomach connects with the intestines by the

pyloric opening. The pyloric opening is a sphincter muscular opening like the anus which connects the stomach with the "duodenum," or beginning of the small intestines. It is called the pylorus, because the word, in Greek, signifies "gate-keeper." When the food is thus churned about in the stomach it seeks exit at this opening, but it is only when this faithful guardian finds it sufficiently digested that it opens the door and permits it to pass out into the duodenum. "*The duodenum*" is the first section of the small intestines. The duodenum is named from its length, being about as long as the breadth of *twelve fingers*. When we say a duodecimo edition of a book, it means that the sheet on which the book is printed is folded *twelve times*. Hence the name. It is in this part of the small intestines that the food is converted into "chyme," and into this part that it is mixed with the "bile" from the liver and pancreatic juice from the pancreas, as also with the secretions of the intestinal glands, which forms the food into "chyle."

The liver is the largest gland in our bodies, and is a part of the digestive tract. It lies on the right side of the abdominal cavity just below the diaphragm. The functions of the liver is to secrete bile and the formation of glycogen, which is a white powder of irregularly-shaped grains without odor or taste, insoluble in alcohol, and commonly known as "animal starch." The liver forms large quantities of "urea" which is the chief solid constituent of the urine. The liver destroys certain poisonous substances absorbed from the intestinal tract, and is, in a manner, a kind of scavenger of the body. It consists of five lobes, which are subdivided again into lobules, cells, capillaries, lymphatic, hepatic and biliary channels. The weight of the liver is between 50 and 60 ounces, or about 3 or 4 pounds. It measures from 10 to 12 inches transversely, by 6 or 7 up and down, and is about 3 inches thick. It is of a brownish-red color. The spleen is an adjunct of the liver, although its office is not yet known; melancholy and low spirits being attributed to it.

The pancreas is a large gland from 6 to 8 inches long. It secretes a limpid fluid, which is used for dissolving of the fat parts of food. It is known, popularly, as the "sweet bread," the Germans designating it as the abdominal salivary gland.

The small intestines are much longer than the large intestines, being about twenty feet long. The length of the small intestines vary in the male and female. In 87 males and 26 females, it was found that the average length in the male was 5 feet 3 inches more than the average length in the female. The longest small intestine observed

in the male was 33 feet, the shortest, 12 feet 6 inches; in the female the longest was 29 feet and the shortest 11 feet. The average for males was 20 feet 3 inches, and the average for females was 18 feet.

The "jægnum" and "ileum" form the longest part of the small intestines, the two being about 19 feet in length. The small intestines are nearly cylindrical in form, being convoluted, and lying almost surrounded by the "colon" of the large intestines. The "jægnum" takes its name from "dry," "empty," because this part of the small intestines is always found "empty" after death. The "ileum" is the last and lowest part of the small intestines. It takes its name from its peristaltic motion, forcing the food along its length into the cæcum by a series of motions like the walking or creeping of a worm. The food passes from the stomach into the duodenum, thence into the jægnum and thence into the ileum, pursuing a downward course, when it enters the "cæcum" or commencement of the large intestines. The cæcum is known also as the "blind gut" being a sort of *cul-de-sac* or blind alley, from which it derives its name. It is a large pouch into which the ileum opens, and from it we find the "vermiform appendix," a small tube without any apparent office, about as large as the stem of a common tobacco pipe, having an opening about as large as the hole in the pipe stem, and being from three to six inches long. From the cæcum the food finds its way into the ascending colon. The colon is the longest of the large intestines, the ascending, transverse and descending colon being about four and a half feet long. In the colon all the useless portions of the food are pressed forward and carried into and collected into the "rectum." By means of the lacteals distributed over these intestines, the useful parts of the food are converted into blood to nourish the organism. "*The rectum*" is the last part of the large intestines; it is about 6 or 8 inches long, and derives its name from *rectus*, signifying *straight*, the old anatomists believing it to be a straight gut. It has, however, two slight curves. The office of the rectum is to collect the useless parts of the food, whence it is expelled by the last opening of the alimentary canal, the anus, a sphincter muscle which terminates this intestine.

We have thus followed the food in its course from its entrance into the mouth to its expulsion by the anus. The course is downwards after it leaves the mouth, and subsequently the stomach. When it enters the duodenum it travels from side to side, still taking a downward course, through the small intestines, until it reaches the colon, when it ascends first by the ascending colon, then it goes sidewise through the transverse colon, finally going downward again through

the descending colon, to be finally collected in the rectum and then expelled; the small intestines being, as it were, surrounded by the large intestines.

We cannot conclude this paper without alluding to the recent wonderful operation of Dr. Carl Schlatter, of Zurich, Switzerland. We all know that men have lived with one leg, one arm, one eye, and even with one lung; but we have been taught that the stomach was a vital organ, the removal of which would result in the patient's death; yet this bold operator, failing to cure the disease of the stomach, for a woman of 56 years of age, which disease would have resulted in her death, conceived the idea of *removing the stomach*. This he accomplished successfully, uniting the duodenum to the œsophagus by stitches and restoring the woman to perfect health. The operation consumed two hours and a half time, while the patient was kept anesthetized during the whole of this time. The cicatrix was then united and nothing indicated the operation but a slight sinking of the outer parts. There was little effusion of blood, and the woman at first was fed on liquid food. After 12 days she moved about her room, and was then permitted to eat solid food. This was still more wonderful as the woman only had one tooth remaining, so that her mouth digestion must have been necessarily imperfect; up to this writing (Dec. 25th, 1897), the patient remains in perfect health. The operation was performed about the middle of September, a month later she left her bed, and was pronounced a perfectly well woman in the following month, November.

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## SELECTED ARTICLES.

### THE CHOICE OF A FILLING MATERIAL.\*

BY DR. DAVIS, London, Ont.

In the consideration of this stereotyped subject we shall not attempt the elucidation of anything original or new, but will endeavor very briefly to give a few personal impressions formed regarding the various filling materials, after a number of years of active practice. We shall not strive to treat of anything other than that demanded by our subject; we shall not speak of the great advances which have been made in the filling of teeth for two reasons: first, that our text does not require it; and, in the second place, in our humble opinion we have not progressed as a profession as we should have done in this all-

\*Read at London Dental Society.

important branch of our most noble calling. It is a deplorable fact that prejudice, in many cases, is more powerful in the influence exerted in our judgment, in the filling of teeth, than the great thought of tooth-conservation. I must fill this tooth with this or that material, because I must demonstrate by my acts, that I am in favor of the specific class of filling materials as advocated and adopted by me. Thus it is that teeth of poor structure, of frail walls with decay encroaching on or near the pulp, are filled with a material totally incompatible with the tooth substance and its surroundings. Another consideration which largely influences the operation is, the amount of the remuneration to be received for the performance of the operation. "Doctor, what is the best filling to be put into that tooth?" is the question propounded by hundreds of patients, nay thousands, daily, and the skilled dentist mentally calculates the size of the questioner's pocket-book before replying. If perchance the carriage and coachman await the patient's exit from the offices, the reply invariably is: "Oh, that tooth must be filled with gold;" on the contrary, if the patient shows by the mud on his shoes and his general appearance that he has "footed it," and that "filthy lucre" with him is very scarce, the reply is: "Oh, amalgam, or some cheap filling will do to fill that tooth." Need we say that this is all wrong; we believe that every tooth, more or less, shows indications of the proper material with which it should be filled, and in every case the dentist should be sole judge of the filling materials to be used, and he should honestly insert that material which he conscientiously believes to be the proper filling for that particular tooth. What have we seen, not once, but hundreds of times? that a tooth filled with gold in the mouth of a rich man is decayed cervical wall and generally shows signs of disintegration and demoralization, while a tooth similarly decalcified, and, under analogous circumstances, in the mouth of a poor man, which has been filled with an amalgam made from silver coin or a similar-made alloy filed up with a rubber file, rudely inserted, in an improperly prepared cavity, and imperfectly protected from the fluids of the mouth during the operation, remains in as perfect a condition as the day the filling was inserted. Oh, for the day to speedily come when the dentist will be paid for his manipulative skill, his knowledge of dental pathology and therapeutics; and the time spent in the perfecting of himself in his profession—rather than for the difference in cost of the filling material.

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But to return to our subject, what should be the great desideratum

in the choice of a filling material? We unquestionably answer, "Tooth Conservation." This comprehends everything; manipulative skill being conceded, we say, that a filling, even without beauty, that will maintain the tooth structure by being compatible with, that will save the pulp from irritation through being non-conducting and non-irritating, is a better filling to insert into a particular tooth, even though it has to be renewed in the course of every few years, than a filling which has every appearance of being beautiful, has great resisting power which, in itself, resists completely the action of the fluids of the mouth and the power exerted on it by mastication, and while it *per se* is as good in every way as the day it was inserted, it stands as the Emperor William did when he entered Paris at the close of the Franco-Prussian war, to see the ruins he had created.

This is no fictitious case, we have seen hundreds of cases of this kind. Beautiful fillings, nicely condensed, finely polished, exquisitely contoured, standing intact and beautiful, while the surroundings are those of demoralization, disintegration, ruin, decay, and death. Prejudice, remuneration and beauty in these cases were the governing considerations in the choice of a filling material. The operator has received the money, the patient a short period of beauty, while the poor tooth, to speak vulgarly, "has got it in the neck." This is not only vulgar but true, as it is generally that part of the tooth anatomy that shows first the mischief created by the operator's greed for money, his desire to have people to be his patients: "Who put that beautiful filling in for you?" and also the patient's folly in the desire to have a filling that presents a fine appearance, as if this was only the great desideratum. Let us not be misunderstood, not be misinterpreted; we believe that in many cases gold is one of the best, if not best, materials to fill teeth. In teeth of hard, dense structure, in which the cavity of decay does not imperge on the cervical wall of the tooth, gold can properly and advantageously be used as a filling material. We have seen gold fillings inserted in such cavities, and they stand as monuments to the manipulative skill and wisdom of the practitioner who so successfully inserted them. In these cases we have consideration of the teeth, also beautiful fillings, hence gold was the proper material to be inserted in those and similar cases. Now, in teeth in which we cannot (in view of the fact that we wish to conserve or preserve the teeth) introduce gold,—what materials are at our command? We will not here speak of an ideal filling material, we have no such; we know what its qualities should be, such as regards color, non-conductive, non-irritating, easy of manipulation, etc., but

seeing that, like the ideal man, it is not here, but in heaven, we shall deal with what we have.

The first is amalgam—let us first define what an amalgam is. We cannot give a better definition than that of *Prof. Flagg's*, viz.: "One or more metals held in combination with mercury by the mercury form an 'amalgam!'" This abused metal was born under most unfavorable circumstances, in fact, in the home of quackery; yet, in spite of its inauspicious birth it has risen above its primitive surroundings, and become a respectable and most worthy member of the noble family of desirable filling materials. No filling material has undergone such tests as the described material. Those who used it were threatened with dental excommunication, and some members of the profession who were convinced of its utility as a conservator of tooth material were formally excommunicated from the American Society of Dentists, for their temerity in using, and also advocating its use to others. These pioneers in dental advancements found that amalgam made from dental alloy unscientifically compounded, rudely and improperly introduced into cavities of decay, imperfectly prepared, "saved the tooth." Thus it was that many a tooth remained in the mouth of the patient to do excellent service for years, instead of being rudely consigned to the dental cuspidor. If this were the result in the past, what should be, and we say is, accomplished with amalgam to-day, when it is prepared on scientific principles, when it is accurately tested, and when it is properly inserted into the cavity. True, it has its defects as we said before. No filling material is perfect, notably its color; yet it is better, we opine, to have a badly discolored tooth in the mouth than no tooth at all. Far better a broken-down tooth, of poor structure, with frail walls filled with amalgam. With this, we shall remember that the amalgam used shall be such that the necessity of the case demands submarine facing, front tooth or contour. Another desirable filling is gutta-percha; this material has suffered in comparison with other filling materials, on account of defective manipulation. It is not our intention to speak of intermediate fillings, or those that are used to live cavities, hence we shall not mention this, that in large buccal cavities, having frail walls, gutta-percha should be the filling material; we remark in this connection, that the gutta-percha should be properly warmed and properly introduced, using for these purposes a gutta-percha warmer and instruments specially designed for the exclusive introduction of these fillings. We could go further and speak of zine-phosphate, oxy-phosphate, oxy-sulphate and oxy-chloride of zinc and numerous other materials,

yet we surmise that we have subverted our purpose, and end our paper with the saying, that tooth conservation should be the first consideration in the choice of a filling material, qualifying this statement by the remark, that if a tooth can be saved equally well with a filling that presents a beautiful appearance as with one that does not, the preference should be given to beauty, otherwise the first consideration—tooth conservation—should invariably govern.—*Dominion Dental Journal*.

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### POINT OF CONTACT.

By R. W. MORSE, D. D. S., Lansing, Mich.

Read before the Michigan State Dental Society, June, 1897.

The normal set of teeth in the mouth of a human adult offers sixty points of contact which represents about three-fifths of the probable points at which caries attacks the teeth. Why is it that the teeth decay more at this point than others? It is due to the fact that at this point and just away from it toward the cervical margin, the surface is not self-cleansing, and there becomes attached to the teeth a thin film of agglutinated substance, made up principally of micro-organisms. The food in process of mastication does not disturb them. The brush passes over the buccal and lingual surfaces, and still they remain. The tooth-pick will dislodge some, but it is necessary to use dental floss, or something of that nature to polish and scour them off. If all surfaces of the teeth were kept cleaned of this accumulation, we would soon find that our profession was considerably crowded; but the laity have not been sufficiently drilled on this method, and those who have been instructed do not find the time to do it thoroughly, hence we are called upon to correct the results of their defiance of Providence. This agglutinated mass of organisms secretes acids—at first attacks the cement that binds the enamel rods together, on account of its not being as dense as the enamel rods. Then the rods themselves are decalcified, and gradually disintegrated, leaving an opening into the surface. In such openings, as fast as found, the microbes establish themselves, and from now on have it all their own way unless the cavities are scientifically stopped by some member of our profession. It is our duty to our patients to instruct them in the use of dental floss and brush to thoroughly cleanse the teeth. Abrasion is the only means by which this can safely be accomplished, and then it is necessary that it should be attended to religiously. Mouth-washes aid in making the microbes uncomfortable, but do not

remove them. Careful brushing and the use of dental floss in connection with mouth-washes is the best method of attack.

But the thing that I wish to call attention to particularly is the restoration of this point of contact by filling. Dr. Black in his talk before the Chicago society, in February, tells of the new method of cutting away the proximal aspects of the molars and bicuspid that are affected by caries, and replacing with large metallic surfaces properly shaped to control the proximal space, and thus offering a roost for the microbes that they cannot destroy with their acids. I quite agree with the doctor in the main, on the counts he has made—in the case of considerable destruction of the enamel and dentine at this point; but I feel that there is a class of cavities that can be treated in a less heroic manner with good results. The moderate and small-sized cavities around which the enamel is not affected would be of this type. Take two moderate-sized proximal cavities as an example in teeth of normal shape and position. At first examination, if time permits, place between these teeth a pellet of cotton saturated with chloro-percha. This is repeated at intervals of three or four days, increasing the size of the pellet until the space is sufficiently large to permit of *thorough* preparation of cavities and of filling and finishing the fillings, and when the teeth resume their natural position the oval surfaces of the fillings should come in contact, and at no point should the enamel on either tooth touch the opposing filling or tooth. The point of contact should be as near the occlusal surface as consistent with the case. Treated in this manner, the margins of the enamel are as self-cleansing as under the best conditions that nature provides and gives the gums in the proximal space good protection. Dr. Miller and Dr. Black have for some time maintained that the fluids of the mouth were responsible for carious teeth, only as they aided or opposed the growth of organisms. Dr. Williams has demonstrated this to be the fact, and accounts in this way for predisposition to decay, whether the teeth are what are known as hard or soft teeth. In cases of marked predisposition it is probably necessary to apply the method Dr. Black advocates. With incisive teeth we see many cases of recurrence of decay at the cervical and at the incisive margin of cavities, that were well prepared and carefully filled, but when they resumed their natural position the point of contact was at either of the margins of the enamel rather than the filling. This result probably was due to not having sufficient space by separating to contour the filling sufficiently to allow of their being finished, and still have the contour project beyond the margins and act as a buffer to hold

the enamel apart, so that they may be cleansed and cleanse themselves to a degree.

I wish to appeal from the decision and practice of some good men in the profession that the use of the matrix is in opposition to these results unless an extreme amount of separation has been procured, while the making and the placing of the filling is a little easier. The completed filling does not often meet the requirement of the restoration of the original tooth.

In crown work, where the space is contracted, there is a liability to having straight surfaces in contact that it is desirable to avoid. Separating will often correct this condition so that cleansing spaces will remain and the gum septum be restored.

In conclusion I wish to appeal to the dental profession to be more thorough in separating teeth to be filled, no matter what filling material is to be used. Make the point of contact of a shape that would best protect the proximal space from the encroachment of food. Have the fillings rest against each other holding the enamel apart from touching adjoining tooth or fillings. This metallic point of contact acts as a protection to the tooth from re-decay as a sled runner is protected from wear by the iron shoe fastened upon it.—*Ohio Dental Journal*.

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## OBITUARY NOTICE.

GEORGE B. MORRIS, D. D. S.

Dr. George B. Morris died at his residence, Morgantown, West Virginia, March 11th, 1898, in his 66th year.

Dr. Morris was one of the most prominent dentists in his native State. He commenced the practice while quite a young man, and being always progressive, he attended Dental College in this city and graduated in 1867. It was while here that we became acquainted with him, and formed a friendship that lasted through life. He returned to his home and soon built up a large and lucrative practice.

He was a skillful and careful operator, and by excellent work won confidence and success, which, with judicious investments, enabled him to leave quite a large estate.

But it was more the attributes of his heart that endeared him to his fellows. Quite a number of students were prepared by him for college, and had the hand of friendship extended to them on their re-

turn to enter the practice of their profession. His mind was too expansive to entertain jealousy, and his nature was characterized by kindness, honesty and industry.

He had his sorrows—one, the loss of his only son, in 1882, at the age of 23; and about two years ago his wife, who had been his companion for so many years, died. But with all he retained his cheerfulness and interest in his surroundings.

He has passed away, but the memory of his bright and useful life is still the inheritance of those among whom he mingled.

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### BOOK NOTICE.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH. Fourth edition. By G. V. Black, M.D., D.D.S., Sc.D. Philadelphia, Pa. The S. S. White Dental Manufacturing Company, 1897.

We have received the above volume, so great a contribution to our dental literature. The four editions which it has passed through since its first presentation is the best evidence of its claims and appreciation by student and practitioner. We find the volume greatly improved in this last edition. But "*Cela va sans dire*" when we think of its source and know of the painstaking and industry of its gifted author.—ED.

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Annual meeting of the Massachusetts Dental Society convenes at Mechanics Building, Boston, June 1st and 2d.

This convention promises to be one of the most successful in the history of the Society.

Extensive exhibits of material by the various dental supply houses and completed operations both in the mouth and in the model by leading dentists, and dental laboratories will be a leading feature.

Full information upon application to F. S. Belyea, Brookline, Mass., Chairman Committee on Hall and Exhibits.

### PRACTICAL PLACE.

#### CLEANSING CLOTHING.

Mullerson's preparation is a mixture of turpentine,  $26\frac{1}{2}$  parts; ammonia solution, 19 parts; methylated spirits, 25 parts; ether,  $2\frac{1}{2}$  parts; acetic ether,  $2\frac{1}{2}$  parts, and water, 25 parts, all by weight.

### RELIEF FROM IVY POISONING.

Complete and immediate relief from the effects of ivy poisoning is reported in the *Medical World* by Dr. W. L. Shanks. His patient was swollen from head to foot, but in an hour after bathing in a solution of sodium hyposulfit was attending to business as if nothing had happened.

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### REMOVAL OF DEVITALIZED PULP FROM ROOT-CANALS.

Adjust rubber-dam. Apply sulfuric acid—a 40 or 50 per cent. solution—directly over opening into canal. The pulp becomes rigid, shrinks, and its removal is a comparatively easy task.—A. H. MEBES, *Trans. fr. Den. Digest*.

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### ROOT TREATMENT—SILICO FLUORIDE OF MERCURY.

This salt has been recommended as being twice as energetic as corrosive sublimate as an antiseptic. It is far less poisonous than the latter salt, hence it deserves notice. It is used in aqueous solutions, 1 to 1,000.—*Pharmaceutical Era*.

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### A COUNTER IRRITANT.

Wet a square of paper fibre with vinegar, cover it with red pepper, not too copiously, and apply to the gum. A small piece of rubber dam may be placed between the cheek and the paper to protect.—DR. HARLAN.

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### AFTER-PAINS OF EXTRACTION.

A single drop of nitro-glycerine—one per cent. solution—in half a glass of cold water is potent and reliable, and lasting in its effects. It is also a marvelous benefit in neuralgia and for the bad headaches following dental operations.—ED. H. BOWNE, in *Items of Interest*.

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### TREATMENT OF PULPITIS.

In the event of pulpitis or inflammation of the pulp, cleanse the cavity by using warm water and apply a small amount of pulverized thymol over the pulp. If the pain still continues, add one drop of chloroform to the applied drug and immediate relief will be afforded.

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### MAD DOG BITE.

A professor in the University of Klausenburg claims to have compounded a solution which completely neutralizes the poison 'ntro-

duced into the system by the bite of a mad dog. It consists of chlorin water, salt-brine, sulphuric acid, permanganate of potassium and eucalyptus oil.—DR. FOWLING, Albia, Iowa, in *Dental Digest*.

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#### CEMENTING BANDS AND CROWNS.

Dry the tooth and paint with shellac varnish before applying the cement. This gives durable adhesion, and should the cement dissolve the shellac will protect the tooth and prevent decay under the band.—W. G. LANGE, in *Dental Cosmos*.

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#### PREVENTION OF TARTAR.

Rinse the mouth freely once a day with water in which a pinch of alum has been dissolved. It is harmless to the teeth and keeps the gums in good condition, preventing the accumulation of tartar.—C. N. PEIRCE, in *International Dental Journal*.

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#### CATAPHORESIS.

A danger in the use of cataphoresis is that the operator may approach too near the pulp, or even expose it. This does not condemn it, but should make us more careful. We should know the anatomy of a tooth so thoroughly that the pulp would be in no danger from our burs. I think cataphoresis a good thing, and know it will obtund; but am not sure it may not injure the pulp.—DR. MARSHALL, in *Review*.

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#### DENTAL INSPECTORS FOR SCHOOLS.

The Ontario Board of Health recently adopted the following resolution: "That dental inspectors be appointed by local boards of school trustees to periodically visit schools and examine children's teeth, and that a dental hospital be started in Toronto for the benefit of poor children; and these recommendations be urged upon the attention of the minister of education."—*Medical Mirror*.

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#### A COVERING FOR SLIGHT WOUNDS.

As a covering and protection for slight wounds on the hands it has been recommended that an application of collodion and Peru balsam (1 : 10) gives excellent results. This will remain intact and be perfect for days; and washing the hands with soap and warm water does not disturb it in the least. It is easily prepared and yields satisfactory results.

## LINING FOR SENSITIVE CAVITIES.

Aristol in combination with chloro-percha makes an effective lining to sensitive dentine or for pulp capping. It is non-toxic, non-irritant and possesses properties similar to that of iodine. In ethereal solution it is germicidal. To Dr. Russell H. Cool the credit of this combination is due.—Dr. W. F. LEWIS, in *Stom. Gazette*.

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## A SUBSTITUTE FOR GOLD FOR DENTAL PLATES.

There is yet needed a metal which will take the place of gold in the making of bases for dentures. Many have advocated aluminum, but this metal does not favor us with the desirable properties of gold. A new metal which seems to have the requisites of the royal metal, and which is less costly, has of late attracted considerable attention in Germany. It is composed of silver, 3.53; platinum, 2.40; copper, 11.71. This metal is elastic and takes a most brilliant polish. It is not acted upon by the fluids of the mouth and answers the same purpose as gold. Dentists who are interested in a substitute for gold will do well to experiment with this formula.—Trans. by Dr. B. J. CIGRAND, from *Zahnaerztliches Woch*, June, 1897.

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## AROMATIC SULPHURIC ACID.

If this be spilled upon black walnut furniture and the color be changed, it can be restored by applying chloroform to the spoiled surface.—F. J. FESLER, in *Dental Digest*.

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## AN EFFICIENT DEODORIZER.

If an old crown, piece of bridgework, or any similar piece of repair work is dipped into electrozone, the offensive odor is instantaneously destroyed.—A. H. PECK, in *Dental Review*.

I can endorse the above with emphasis.—Ed. .

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## RELIEF OF PAIN AFTER EXTRACTION.

Sig.—Apply in socket on pledget of cotton.

2. A potent and reliable remedy for the immediate after pains of extraction is amyl nitrite. The patient to inhale the preparation about three or four seconds and then remain quiet in the chair about five minutes or until the amyl nitrite has spent its primary force.

3 Dr. Thomas says for severe pains after extraction syringe socket well with hot water, which will relieve it almost immediately. Dr. Hays recommends adding a little tincture of aconite to the hot water and afterwards dressing with campho-phenique.

4. A single drop of nitro-glycerine—one-per-cent. solution—in half a glass of cold water is potent and reliable, and lasting in its effects. It is also a marvelous benefit in neuralgia and for the bad headaches following dental operations.—*Dom. Dent. Jour.*

#### SEPARATING MODEL FROM IMPRESSION.

Drop model and impression into hot water for a minute or two, after which they will separate without the least trouble, leaving the model much smoother than if whittled out. Another model, if desired, can be made in the same impression, as in nearly every instance the impression will come off in such large pieces that they can be placed back in the tray and fastened with a little wax.—J. A. ROBINSON, in *Dental Weekly*.

#### BLOOD STAINS.

Dr. Blenkiser in the *Scalpel* says that surgical instruments, sponges, the hands of the operator and blood-stained articles may be readily cleansed by washing them in a tepid solution of tartaric acid and rinsing in water without soap.—*Dental Digest*.

#### FORMALIN IN DENTISTRY.

Lepkowski announces in the *Przegląd Lek.*, 1895, Nos. 20 and 22, that he has found formalin very effective in cases of acute pulpitis, when even after the tooth has been filled the pain ceases in a few hours. Also after extraction of the sound pulp, in cases of incipient periostitis, and where the pulp is changed into an ichorous mass. He first cleans the teeth as perfectly as possibly, and then introduces a cotton wad dipped in formalin, which he covers with a staniol plate, on top of which he puts the complete filling. A moderate pain follows for several hours, if the nerve had not been entirely killed. Formaldehyd kills the sound pulp completely, with no greater pain than accompanies the use of arsenic paste, with this advantage, that the tooth can be filled at once, without further cleaning. He hopes that this treatment will be found all that he expects from it at present.—*Centralblatt f. Chir.*, February 8.

#### TO PREVENT WEEPING GUM.

Before mounting a crown on a root or abutment, or filling a labial cavity where a clamp or the dam cannot well be applied, a wisp of

cotton on a broach, dipped in trichloroacetic acid and passed gently under the gum margin, will prevent the weeping of the gum, thus keeping root and cavity dry. It is also a splendid styptic.—*American Dental Weekly*.

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SUCCESS OF THE VIENNA TREATMENT IN EFFECTING THE PASSAGE OF A SET OF FALSE TEETH.

A man, aged forty-two, swallowed a set of teeth while taking a drink of ice water. He made every effort to dislodge it by coughing and retching, but without result. His wife pounded him vigorously between the shoulder blades. The plate passed down the œsophagus with a sensation of scraping, followed by a feeling of relief. He was given two large pieces of apple to swallow, which he did without difficulty. The plate contained two central incisors and the left first molar, and having at each end a clasp. Measurement of plate was: Greatest length from tip to tip, one and three-quarter inches; the greatest width was three-fourths of an inch. The clasp encircling the left second bicuspid was of gold, and projected one quarter of an inch from the plate. The clasp upon the right side clasped right cuspid, and projected one-eighth of an inch from the plate. It was explained to the patient that it would not likely pass the pylorus, also the danger if it did pass of being caught at some portion of the intestinal tract, and cause obstruction or perforation with fatal consequences. He declined to remain in hospital and also to take an emetic. He was told to drink copiously of lukewarm water and mustard, and to eat only mashed potatoes for the next forty eight hours. The patient returned the next afternoon. On reaching home he had taken a pint and a-half of warm water with a tablespoonful and a-half of Coleman's mustard. This failed to nauseate him but put him to sleep. At 2 A. M. he awoke and ate a large plate of mashed potatoes. After sleeping he again ate heartily of mashed potatoes at 9 A. M. He slept for an hour, and soon after 10 o'clock dressed and lay quietly on a lounge. Shortly before noon he felt a "scratching sensation" in left iliac fossa over the line of the sigmoid flexion of the colon, attended with an impulse to evacuate the bowels. This he did, and obtained a normal stool. Again in ten minutes he had another motion, discharging a large mushy mass, in which the teeth were discovered. There were large pieces of shaved beef, as well as the potatoes protecting and coating the plate in its passage through the intestines.—HENRY L. WILLIAMS, M. D., in *Therapeutic Gazette*, January 15th, 1897.

## DIAGNOSIS FOR CONSERVING THE PULP.

Dr. J. Y. Crawford speaks very interestingly on this subject, and his method is worthy of consideration: Put on the rubber dam, dry the cavity and remove the decay; note carefully the entire field of dentine exposed by decay and your operative procedure; if the dentine is hypersensitive or normally sensitive throughout the entire field, you may hope to conserve the vitality of the pulp, unless something is wrong in your operative procedure. But if in the corner nearest the point of exposure the dentine shows opacity and is not sensitive on that side, while it is sensitive in other portions, you may know that that side has been profoundly impressed by the onslaught of inflammation; that that portion of the pulp is not performing its functions. Get blood at the point of exposure, and as the inflammation is reduced, you will note the dentine becoming more and more sensitive. This is a point of the greatest importance in deciding whether or not to try and save the pulp alive. The contents of the tubules may be only paralyzed and temporarily inactive, but if you fail to get a ready response, as above, it is more prudent to wait, but if there is no degenerated portion of the pulp you may hope that nature will resume her functions; that you may get the mastery of the disease—convalescence—recovery, and the vitality of the tooth be preserved as though the pulp had never been exposed.—*American Dental Weekly*.

## A USEFUL MODELING COMPOUND.

|                         |             |
|-------------------------|-------------|
| Stearin .....           | 25 grammes. |
| Copal, semi-soft .....  | 25 “        |
| Talcum, powdered .....  | 50 “        |
| Carmines .....          | 0.5 “       |
| Oil, rose geranium..... | 6 drops.    |

—DR. DAVID, in *Journal de Pharmacie*.

## ROOT PERFORATION.

A clever writer has said that the best treatment for perforation is the preventive treatment. Dr. Register, in the *International Dental Journal*, says:

If in reaming canals we perform the operation very carefully, it will be found that as the instrument approaches or touches the cementum, the patient will give evidence of pain; if the patient be previously directed to state when sensation occurs, perforations

should never occur. When he finds that the instrument (the reamer) has invaded the cementum, he sterilizes the canal thoroughly, and is careful to exercise no pressure in placing the root-filling.

Those cases of perforation near the apex which he has encountered, he has treated after one method. Pack in the canal, and against the pericementum at the perforation, a small quantity of salol, and over this place a cone of zinc phosphate. Of course, the salol disappears, as it always does, after a period when used as a canal filling; but he believes that it performs its office as an unirritating antiseptic while it lasts.

One of the best ways to treat a perforated root, when the canal is accessible, is to whittle a piece of wood to the length and size of the canal, trying it in to ascertain that it does fit; then make the wooden point a little smaller and wrap around it, to the depth of the canal, a piece of very thin, well annealed platinum foil. Dry the canal and coat the platinum with a thin varnish; then push the platinized wood point to the end of the canal, and gently remove the wooden point, leaving the platinum in the canal. Blow in hot air to hasten the hardening of the varnish, and then proceed to fill.—Ed. *American Dental Weekly*.

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#### TO SEPARATE CAST FROM IMPRESSION.

When dry stain the impression with thin shellac. Spread a thin film of wax along the edge of the impression and soak for two or three minutes in a solution of soap. Just before pouring wash off the soap with a dash of cold water. Dry well, then immerse for a minute or two in boiling water. The impression can be easily broken from the cast.—W. BUZZELL, in *Ohio Den. Journal*.

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#### CHARACTER IN WALKING.

Quick steps are indicative of energy and agitation.

Tip-toe walking symbolizes surprise, curiosity, discretion or mystery.

Turn-in-toes are often found with preoccupied, absent-minded persons.

The miser's walk is represented as stooping and noiseless, with short, nervous, anxious steps.

Slow steps, whether long or short, suggest a gentle or reflective state of mind.

Where a revengeful purpose is hidden under a feigned smile, the step will be slinking and noiseless.

The proud step is slow and measured, the toes are conspicuously turned out, the legs straightened.

The direction of the steps wavering and following every changing impulse of the mind inevitably betrays uncertainty, hesitation and indecision.

Obstinate people, who, in argument, rely more on muscularity than on intellectual power, rest the feet flatly and firmly on the ground, walk heavily and slowly, and stand with legs firmly planted and far apart.—*Home Queen*.

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#### ALUMINIZED GUTTA-PERCHA.

|                         |                 |
|-------------------------|-----------------|
| White gutta-percha..... | 8 parts.        |
| Aluminum fillings.....  | 5 “             |
| Oxide of Zinc.....      | 1 part.         |
| Whiting.....            | $\frac{1}{2}$ “ |

Easily manipulated, and when firmly packed holds its position well in the cavity without bulging.—F. W. BLISS, in *Pacific Stom. Gazet*.

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#### RELIEF AFTER EXTRACTION.

A pledget of cotton dipped in a saturated solution of camphor in chloroform, placed for a few moments in the socket, will almost instantly afford relief after extraction. Remove as soon as pain ceases.—D. W. BAKER.

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#### DANGER IN FRUIT.

Of late we have heard much about appendicitis, and a great many people who are fond of fruit and who need it to keep in a healthy condition, discard its use through fear of being attacked by it. As a fact, the disease is not any more common than it used to be, and it is foolish for persons to deny themselves the pleasure of eating fruit through fear of microbes or appendicitis because, perhaps, one in a million persons happens to get a seed in the “appendix.” There are, however, precautions which it would be always well to take; for example, all fruit with skins on should be washed and peeled before being eaten—especially fruit exposed in the street, and where dust and flies can have access to it. Few are aware of the danger of food contamination by flies. They are great scavengers, and are not at all discriminating as to what they eat nor where they settle. They pass at one bound from an infectious carcass, a foul ulcer, or a mass of filth to the apple, pear, or peach, and with dirty feet and proboscis run over it and contaminate it. Hence all fruit should be first washed and dried and then peeled.—*Family Doctor*.

# THE Dental Office and Laboratory.

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## THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

[FIFTH PAPER.]

We next propose to describe the manner of constructing an all-gold crown by "Electrical Deposit." The first procedure in this, as in the construction of all crowns, is the preparation of the root. In the preparation of the root for all-gold crowns there is no necessity of cutting the root down to the gum level. Indeed, it were better, and will enhance the stability of the operation, if the remains of the root stand about one thirty-second of an inch above the gum level. The points of similarity will be the disinfecting of the root canals and the preparation of the root end so as to obtain parallel sides.

The first procedure—supposing we are about to construct an all-gold crown for a bicuspid—would be to obtain a natural tooth. The measure of the root end having been taken by the dentimeter, this measure is tried on the root of the natural tooth *at its neck*. If the root of the natural tooth be *too large* it may be ground carefully either with carborundum wheels in the dental engine or in the lathe. If *too small* the circumference may be increased by a film of wax melted over this part, so as to make it correspond in size to the circumference of the root end in the mouth. The crown of the natural tooth is then tried in the space in the mouth to see if this be correct. This should pass between the adjoining teeth *easily*. There should be a space, corresponding to the thickness of a visiting card, on either side of the proximate natural teeth. This space may be obtained either by grinding the natural tooth, should it be too large to pass between, on each of its proximate sides *slightly*, so as not to mar its shape, or by grinding the natural teeth in the mouth on these surfaces slightly also, *but preferably the former*. The object of this is to compensate for the thickness by the electrical deposit.

The natural tooth is then taken in the left hand, and, with a lead

pencil, a line is drawn on it from the point of its buccal surface all along the crown and root, passing its foramen, continuing along its palatal surface and over its masticating surface until the line reaches the point of departure, thus dividing the tooth with the pencil line in two halves. A piece of wax is then softened. This should be about the size of a half dollar and about four times as thick; and the tooth sunk into the softened wax up to the line marked upon it. As the wax will curl in this procedure, the exact halving will have to be farther accomplished with the warmed wax spatula so as to bring the wax *squarely* up to the line. The tooth thus treated is shown by Fig. 70. This is thinly smeared with oil and plaster of Paris, mixed free of all bubbles, poured over it. When the plaster hardens the wax is removed, and guide holes are then made into the plaster, as shown by Fig. 71. This is again coated

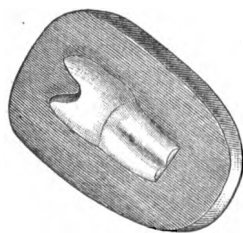


FIG. 70.

with the parting material, wrapped around with a piece of paper and plaster of Paris poured on the reverse. When these two matrices are separated, as shown by Fig. 72, the two plaster matrices are separated, the natural tooth (which served for the model) removed and an inlet cut, as is also shown by the engravings (Figs. 71 and 72). The two halves are held together by an elastic band. Fusible metal is melted and poured into the plaster matrix through the inlet. This produces a metal tooth the same as the natural one, from which the matrix was made, Fig. 73. There is likely to be a slight burr on the sides of the metal tooth where the halves of the plaster matrices came together, but this may be filed off and made smooth. That part of the metal which filled the inlet is now filed or sawed off, and a small hole drilled through to enable the conducting copper wire to be attached to the model. This is shown by Fig. 74. The metal model is now submerged into the gold, silver or copper solution, and connected with the electric battery.

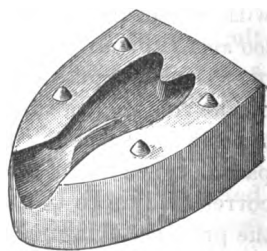


FIG. 71.

For experimental purposes (or copper deposit) a simple battery may be constructed, as shown by Fig. 75. It consists simply of a glass jar, a porous cup, a piece of sheet zinc, and a copper rod. The glass jar is half filled with a *saturated solution* of "blue stone" or

sulphate of copper. The porous cup is filled, half full, with a solution of sulphuric acid and water. A piece of sheet zinc is made perfectly clean by scrubbing it with a piece of rag dipped in a solution of sulphuric acid and water. When thus cleansed, it is slightly amalgamated, on both surfaces, with a few globules of mercury applied with

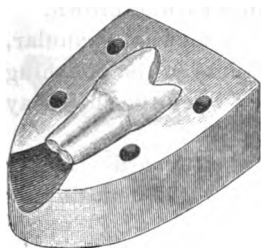


FIG. 72.

a rag. The object to receive the deposit is attached to the copper rod, and suspended in the solution of blue-stone, the zinc plate is also submerged about three fourths of its length in the solution of sulphuric acid within the porous cup, and likewise connected to the copper rod by a fine copper wire. One pound of



FIG. 73.

blue-stone will make three pints of a saturated solution. The blue stone is best dissolved by pouring boiling water on it, and stirring frequently. The strength of the solution of sulphuric acid is about one part of acid to ten parts of water. It should be made in a glazed vessel by pouring the water, gradually, on the acid, and stirring this with a glass rod. If all the water be poured on at once, considerable heat is evolved, which is apt to crack the vessel. These solutions, when cold, are placed in the two vessels — the acid in the porous cup, the copper solution in the glass vessel.



FIG. 74.

The deposit begins very promptly. The object should be removed every half hour or so, and the whole surface brushed over with a scratch brush. The object should be held with tweezers while doing this, as the handling with the fingers is detrimental, all grease or dirt of any kind attaching to the object in the slightest degree defeating the operation. It will take about five or six hours to obtain a deposit of sufficient thickness for a crown.

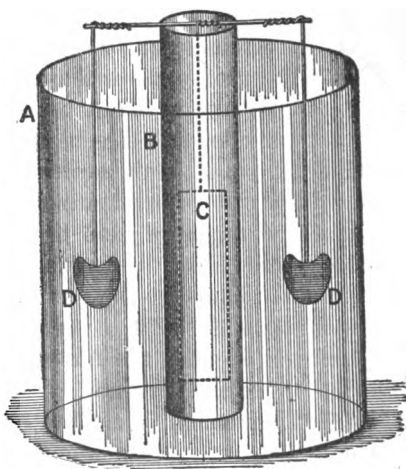


FIG. 75.

This length of immersion will give a thickness equal to about 28 or 30 of the gauge plate when done with copper solution.

The crown is then removed from the solution and sawed off a little above the gum margin. It is then held with tweezers in the flame of the spirit lamp, or Bunsen burner, when the fusible metal melts and falls out, leaving a perfect shell representation of a natural crown.

It will be found that the metal has deposited somewhat granular, but by means of small corundum wheels and points in the polishing lathe, a perfectly smooth surface may be obtained when the shell may be polished. Fig. 76 represents the finished crown.

These crowns could be made of silver and afterwards thickly coated with gold for economy sake; but, if preferred, the deposit may be made entirely of gold.

Should the neck of the crown be too close a fit it may be stretched a little by hammering on the horn of the bench anvil after annealing. A bicuspid crown, such as is represented by Fig. 76, will weigh, after being submerged in copper solution for six hours, about 18 grains.

If the operator desires to make a crown of silver, such as we have described, a silver solution will be necessary. To make the silver solution the nitrate of silver is used. This may be obtained from a druggist, or the dentist may prepare it himself. If the dentist desire

to prepare it himself, the manipulation should be conducted either in the open air or within the fire-place where the fumes of nitrous gas may escape up the chimney.



Nitrate of silver is prepared as follows: It is best always to use pure silver, because coin silver always contains a little copper. It is best also to have it rolled quite thin and

cut in small pieces, as the action is more prompt in this form. Take of silver two troy ounces; nitric acid two and a half troy ounces, and about a half ounce of rain or distilled water. The acid is mixed with the water, in small quantities at a time, in an evaporating dish, and the silver added to the mixture. A glass funnel is inverted over this with its edges within the evaporating dish. This is set within the fire place so that the fumes of nitrous gas may escape up the chimney, if the manipulation is conducted indoors. The evaporating dish is set in a tin or iron plate filled with sea sand, and this placed on the basket of the Bunsen burner, Fig. 77, when gentle heat is kept up until all red vapors and ebullition cease. The funnel is then removed and the heat increased, and the mixture evaporated to dryness. The dry mass is melted, and the heat continued with constant stirring, by means of a glass rod, until all the free nitric acid is dis-

sipated. The mass, when cold, is dissolved in six fluid ounces of rain water, when all the insoluble matter subsides, and the clear solution carefully decanted. The residue is then mixed with a fluid ounce of rain water and filtered through paper. The filtrate is then added to the decanted solution, when it is evaporated until a pellicle begins to form. It is then placed in a warm place to crystallize. The final operation consists in draining the crystals until dry. The crystals of nitrate of silver thus obtained should be kept in a wide-mouth, well-fitting ground glass stoppered bottle.

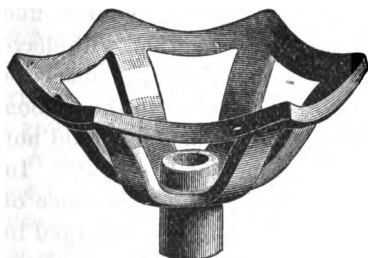


FIG. 77.

#### THE SILVER SOLUTION.

To make this solution for the deposition of silver, dissolve the nitrate of silver crystals in three pints of rain water. This should be done in a glass vessel or a stone jar glazed on the inside. A little common salt is added to this—a pinch at a time. This will cause the silver in the solution to fall to the bottom. When all the silver in the solution ceases to fall the addition of salt must cease. The water is then carefully decanted and the chloride of silver, which was precipitated in the jar, is washed several times with rain water.

A half pound of cyanide of potassium is added to a quart of rain water, and then added to the chloride of silver in small quantities at a time. This addition forms the silver cyanide or silver solution. When making this solution, it should be stirred with a glass rod until all the cyanide solution is added to the silver precipitate.

To deposit a crown of silver, the Bunsen battery is used. Fig. 78 represents the Bunsen battery. This consists of an outside glass jar in which a solution of sulphuric acid and water is put: one part of acid to ten parts of water. Into this is placed a cylinder of zinc. This should be

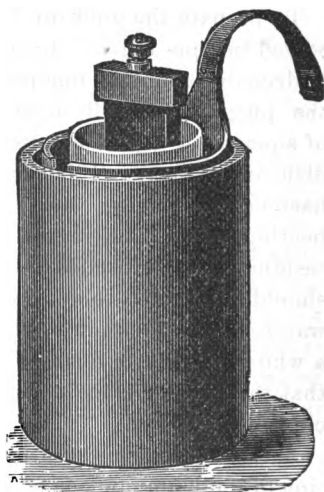


FIG. 78.

scrubbed clean and well amalgamated with mercury. Within this again is placed a porous cup, and within the porous cup a rod of carbon. The porous cup is nearly filled with eight parts of a saturated solution of bichromate of potash to one part of sulphuric acid.

To deposit a crown of silver, the metal model is placed in the vessel containing the silver solution, being attached, by means of a fine copper wire, to the zinc cylinder of the battery. Another wire, having a piece of fine silver on the end of it, is also submerged into the silver solution, and the other end of this wire is attached to the carbon of the battery. This piece of silver and the metal model should not touch each other, but should be kept about an inch or two apart. In speaking of these, the model is called the *cathode* and the piece of silver the *anode*. The model is permitted to remain submerged in the solution about twenty-four to thirty-six hours, removing it from time to time, and scrubbing it with a wire scratch brush, as before recommended.

If it be the intention to plate the crown with gold, twenty-four hours will be sufficiently long to keep it in the solution, the remaining time being consumed for receiving the deposit of gold.

#### THE GOLD SOLUTION.

To prepare the gold for the gold solution: The gold is first dissolved in aqua regia. Aqua regia is made by combining two parts of hydrochloric acid to one part of nitric. Gold foil scraps are best for the purpose. To dissolve five pennyweights of gold, one ounce of aqua regia will be necessary. The gold is placed in an evaporating dish, and the aqua regia poured on. The solution of the gold may be hastened by placing the evaporating dish in a sand bath, and gently heating this. Continued heat will drive off the acid and leave a residue like thick molasses of a dark red color. At this stage it should be allowed to get cold. This mass is then dissolved in rain water, about three pints, when it becomes of a brownish color. Should a white precipitate form on the bottom of the vessel, this will indicate that there was a trace of silver in the gold, the precipitate being the chloride of silver.

After making this solution from the residue of the aqua regia solution of gold, ammonia is added in small quantities, constantly stirring it with a glass rod. All the gold of this solution will fall to the bottom of the vessel like a brown powder. The liquid is now carefully decanted, and the brown precipitate washed several times with rain water. After this washing the precipitate is dissolved in a

strong solution of cyanide of potassium, a half pound of the cyanide being used to a quart of rain water. This solution is then filtered through paper when it is ready for use.

The deposition of a gold crown is similar to a silver one. The metal model being submerged into the gold solution, and connected with the zinc cylinders of the battery, and a piece of fine gold soldered to a piece of thin gold wire, and this twisted to a copper wire and connected to the carbon of the battery. The same amount of time will be necessary to effect the proper thickness of the deposition for a gold crown as for a silver crown.

A silver crown may be moderately well coated with gold by placing the crown in a vessel, containing the gold solution, on the end of a piece of sheet zinc, which has been scraped clean, and allowing this to be submerged in the solution. Heat, gently applied, hastens the coating.

It has been suggested that the strength of these deposit crowns may be materially strengthened if, instead of scrubbing with a scratch brush, as has been recommended, they be well and thoroughly *burnished*. This compresses the deposit, and in a great measure gets rid of the granulations which form in the process of electrical deposit.

[TO BE CONTINUED.]

### METAPHYSICS.

Metaphysicians only preach the gospel of doubt. The whole science of metaphysics consists of the questioning spirit, which analyzes everything without arriving at any definite conclusion about anything. We notice the ingratitude in these philosophers who, in early life, begin by asserting their ignorance and their weakness, and the feebleness of their reason to account for things, when they ask for God's assistance. God in His mercy takes pity on them and answers their prayer, according them the light which they seek and which they could not obtain except through Omniscient aid. But once the reason and light is obtained they turn in their ingratitude and hold themselves up as the true expounders of revelation.

They imagine that the age in which they live is the age of all intelligence, science and wisdom. But don't you think that the Ancient World thought themselves quite as smart and scientific as we think ourselves in our day? Do you not imagine that they thought

that science was as much advanced then as we think it is now? and that there is little yet to be learned? Don't you think that there were religious skeptics, atheists, materialists then as we have them now, who founded their faith on the advances made in learning, science and reason? And yet do we not know how the world believed in Ptolemy and his teaching; yet Ptolemy's theories were set at naught by Copernicus. And so is it now with philosophers like Tyndal, Huxley, Darwin, Spencer and others, who imagine they are men of God-like minds, while their supposed infallible theories may be upset by others yet to come in another age. The infallible word of God *alone* remains unchanged throughout all ages.

Reason may be a very fine thing, but we cannot test everything by it. The ignorant peasant hoots at the idea of antipodes. His reason and his senses both tell him that such things could not be. What! this flat earth round, and men and women walking topsy turvy! No, no, he was not such a fool as to believe such talk.

Reason alone never yet taught us anything, neither science nor religion. No sane person seeks science unscientifically, but ninety-nine out of a hundred seek religion irreligiously. Humility—not pride—is the A B C of all religion, and he or she who asks God otherwise than a child seeks its father will never find Him. What is reason? Don't you see that it varies in individuals, and is modified by all the accidents of birth, education and life? Does not one man's reason tell him there is a God, and another man's reason assure him there is none? Besides, do all love *right* and hate *wrong*? If reason be your only moral code, it goes neither far nor deep. The purer, the nobler part of man—that part which will suffer ungrudgingly for God, for country, for justice, for right, for honor—has not much to do with reason. For reason has no right to condemn us to sacrifice, and, what is more, reason has never done it; so, if you go by reason, you may certainly avoid foolish things; but you will never do great ones, and, what is almost as bad, you will be incapable of recognizing and admiring greatness in others.

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### OBSERVATION.

We should all cultivate this useful attribute. When you are introduced to a person remember the name. If your memory be bad, connect the name by some association or circumstance so that you may recall it. In conversing, if the person be a lady, note her complexion,

the color of her eyes and hair, her teeth, lips, cheeks, ears, nose, hands. Let nothing escape you. Note if she be natural or affected. If she speak correctly or make errors in grammar or pronunciation, such as "wonst," "twist," "Toosday," or "between you and I" instead of "once," "twice," "Tuesday," or "between you and me." How she carries herself, how she walks, how she dances. Describe her in your mind. If she have a lively wit, a ready tongue, a showy shape, a sprightly manner. Observe her dress and the way it fits her, and the manner she wears it. Think of its color, material, quality. Her natural and artificial adornments. Whether she be "taking" or "repulsive," reserved or forward, rude or amiable. It is only by the observation of these, and many other points, that one learns to judge character, beauty, amiability, etc. Observation applies not only to persons, but to all things, and the parent should cultivate this spirit by questioning their children when they return from their walk, as to what they saw, and make them describe minutely every little circumstance connected with it.

I recall an anecdote bearing on this, which I will relate to show the difference between two children. A young mother had sent her two little boys to walk. On their return she questioned them as to what they had seen. One of them said, "Oh I didn't see much, only a man driving a cart along the road." The other said "Yes, mamma, I saw that, too; but the cart was filled with bricks, and the man had on an old torn coat and hat, and he had a grey horse pulling his cart; he kept smacking his whip all the time, and a little dog passed and he reached over and cut the poor little dog for nothing. It must have hurt the dog badly, as he limped as he ran away howling. The cruel man only laughed; but I felt glad myself, shortly after, as there happened to be a deep hole in the road and one of the wheels of the cart went into this hole, which upset the cart and nearly made the horse fall, so that the bad man had the trouble to take the horse out of the cart, also a great many of the bricks, so as to make the cart light enough that he could get it out of the hole." Thus we see how observation tells with one and with another; both children having seen the same things.

In our own calling we may observe many things about our patients. Thus, when we see blue eyes and light hair, we may be sure to find white teeth. We see thick lips and flabby cheeks and soft flesh, when we are sure to find thick broad teeth. When we observe hard, dense, yellowish teeth, we also notice stiff hair, rather coarse. When we see the lips firm, the eyes bright, the manner decided, we also observe

hard, strong teeth. Thin lips, sharp angular features show us a decided disposition. Other indications about the face, mouth, teeth, lips and membranes indicate certain diseases, while some of those we have enumerated teach us the temperaments of the individuals. It is only by a close attention to points which many overlook that the symptoms of diseases are noted. It would not strike our attention, on visiting a patient in bed, to notice that he would draw his leg up towards his buttock, yet this has been observed to be the invariable action of the commencement of typhoid fever. The pricking of the bed clothes, the restlessness of the patient, the turning from side to side, the incessant gaping, the constant dropping to sleep with incessant hallucinations, are all indications of disease which aid the physician in making his diagnosis, so that observation is one of the most important attributes to inculcate.—THEODORE F. CHUPEIN.

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## ALUMINUM CROWNS.

### A SINGULAR INCIDENT.

GEORGE L. TODD, Philadelphia, Pa.

A lady, twenty-five years of age, in good health, presented with an aluminum crown on the left inferior second bicuspid to be repaired. I found the grinding surface worn away by mastication. As it was set with cement, I excavated small portions and filled to the surface with alloy—squeezed dry. In eighteen hours after this operation patient returned and said that during the interval she had “spit out a quantity of sand,” as she expressed it, and on examination I found the cement and alloy intact, but the crown had entirely disappeared. As aluminum has no affinity for mercury, I am at a loss to account for this singular behavior.

### EDITORIAL REMARKS.

This is not the first time that singular occurrences have been reported in the setting of aluminum crowns. Only lately Dr. Jos. Halsey, of Swedesboro, N. J., reported before the Pennsylvania Association of Dental Surgeons, a singular occurrence in the setting of one of these crowns. In the case he reported he mentioned that the crown was set with alloy; that as soon as it was set, an exudation sprang out from all parts of the crown resembling “hoar frost” in the minutest spiculæ.

When this was wiped away more of the exudation continued. It

finally ceased, when the patient stated that the tooth emitted a "hissing sound" similar to the escape of steam from a steam pipe. Dr. Halsey had set aluminum crowns before with alloy, when no sequences of this nature supervened; but in the case reported he had used an alloy which had been recommended to him, so that he thought the alloy had something to do with the sequences. The report had not been made public as Dr. Halsey wished to make further trials with the same alloy as he had used to find out if similar results would ensue.

The discussion which ensued on this report established nothing, as none of the members present had had any experience of the kind, many of them having never used aluminum crowns; but it was conceded that aluminum was a metal invested with such strange affinities that it was only by delicate chemical tests and experiments that any answer could be given to its many strange peculiarities.

We would invite a discussion on this subject, and be pleased to hear from all who have had any experiences such as have been presented by Drs. Todd and Halsey.—ED.

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### TO APPLY THE RUBBER DAM.

In order to get the rubber dam well up on the neck of the tooth, so as to obtain a clear view of the cervical margin of the cavity about to be filled, wrap a piece of dental floss or gilling thread twice around the tooth, and push this well up on the neck of the tooth, then tie. Let this remain for a couple of days, and when the patient returns, the application of the dam can be made with ease to the operator and with little discomfort to the patient, affording a perfect view of the parts to be operated on. Should there be a large space between the teeth, the interdental space *below the ligature* may be filled with cotton steeped in sandarac varnish, or with pink gutta-percha.—T. F. CHUPEIN.

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### CLASP PLATES.

When a resort has to be made to clasps, either in gold, silver, or vulcanite work, for the steadying, retention, or greater stability of artificial teeth, I often find it is better to crown with gold the tooth thus used, as the action of the clasp, either by wear or by the deposition of food held next the tooth, causing decay, or from whatever

other cause, destroys these teeth so quickly that something of this kind should be done for the benefit of the patient, and to prevent the loss of such teeth made very valuable for the support they give to the denture.—T. F. CHUPPIN.

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### HOW TO SEPARATE A FLASK SO AS TO SOFTEN, NOT MELT, THE WAX BASEPLATE WITHIN.

Boil water in a saucepan, then put the flask in this boiling water. The cold flask, with its investment of plaster, will so chill the water that it will cease to boil. Let the flask remain in the water until the water begins to boil again, when you may lift the flask out and pry it open, to find the wax nicely *softened* and not *melted*.

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### CHICAGO DENTAL SOCIETY.

I enclose the list of officers of the Chicago Dental Society for 1898-99, elected at the annual meeting, held in the Stewart Building, Tuesday evening, April 5th, 1898 :

President, J. E. Hinkins ; First Vice-President, D. C. Bacon ; Second Vice-President, E. A. Royce ; Recording Secretary, Elgin Ma Whinney ; Corresponding Secretary, C. S. Bigelow ; Treasurer, E. D. Swain ; Member Board of Directors, J. G. Reid ; Board of Censors, A. W. Harlan, W. V. B. Ames, C. N. Johnson.

C. S. BIGELOW, Corresponding Secretary.

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### BIRMINGHAM DENTAL COLLEGE.

The annual commencement exercises of the Birmingham Dental College were held at O'Brien's Opera House, Birmingham, Ala., on Tuesday evening, April 5, 1898.

The annual address was delivered by Judge J. J. Banks ; the valedictory by H. T. Hamblen, D.D.S., of Texas.

Number of matriculants for the session was thirty-four (34).

The degree of D.D.S. was conferred on the following graduates by T. M. Allen, D.D.S., Dean :

J. W. Balkcom, Ala. ; C. F. Ellis, Texas ; W. R. Dillard, Miss. ; I. F. Drummond, Ala. ; H. T. Hamblen, Texas ; J. W. Key, Miss. ; H. N. McTyeire, Ala. ; R. L. Rogers, Georgia.

### THE NATIONAL DENTAL ASSOCIATION.

The next annual meeting of the National Dental Association will be held in Omaha, commencing on Tuesday, the 30th day of August, 1898.

Attention is called to the fact that all who were members of the American Dental Association and of the Southern Dental Association at the time of the formation of the National Dental Association, are now members of the latter organization.

The Constitution, Article III., Section 5, provides as follows :

"It is hereby specially provided that all persons at present permanent members of the American Dental Association and of the Southern Dental Association, are permanent members of this Association, and entitled to all the privileges of the class to which they belonged without further action, and the treasurer is hereby directed to transcribe their names upon the roll of membership of this Association."

The officers of the National Dental Association will leave nothing undone to make the meeting at Omaha a success, and they hope the attendance and interest in the first active annual meeting of the Association will be commensurate with its importance.

By order of

THOMAS FILLBROWN, President.

EMMA EAMES CHASE, Corresponding Secretary.

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### DENTAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO.

The seventh annual commencement exercises of the above institution was held at Music Hall, on Tuesday evening, April 26, in the city of Buffalo, N. Y., in connection with the departments of medicine and pharmacy, when *sixty-six gentlemen* were graduated as Doctors of Dental Surgery, upon the recommendation of the Faculty; these having complied with all the requirements which entitled them to the degree. Of the number, 45 were from the State of New York; 18 from Ontario, Dominion of Canada; 2 from Pennsylvania, and 1 from Ohio.

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### BOOK NOTICES.

INSTRUMENT NOMENCLATURE WITH REFERENCE TO INSTRUMENTATION.

By G. V. Black, M. D., D.D.L., Sc. D., Chicago, Ill.

We have received from the National School of Dental Technics the above pamphlet, which is an effort at the naming of all the instru-

ments employed in the various operations which the dentist is called upon to perform.

It is a classification of these, and is a farther exhibition of the care, industry and earnestness of Dr. Black to reduce everything to system and order.

While other men are playing billiards or cards or riding bicycles, this good man is laboring hard for the benefit of the profession of his choice. What industry! How does he find the time to accomplish all he does?—ED.

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CATAPHORESIS OR ELECTRICAL MEDICAMENTAL DIFFUSION AS APPLIED IN MEDICINE, SURGERY AND DENTISTRY. By William James Morton, M. D., professor of diseases of the mind and nervous system, etc., etc., etc. New York: American Technical Book Co., 45 Vesey St. 1898.

We have had Cataphoresis with us now for over two years. Indeed, we think that the experiments of Prof. Morton were first given before the First District Society of the State of New York, in February or March, in the year 1896. Since then innumerable appliances have been put on the market for the production of insensibility in the preparation of cavities in painful teeth, the removal of pulps, and the bleaching of discolored teeth by electrical osmosis. Those who have used it report most gratifying results, and the time which was required to produce this insensibility, which was one of its drawbacks, has, by later reports, been greatly lessened.

Cataphoresis is no longer experimental, its results may be counted on as certain, at least so far as manipulation in dentistry is concerned, and to those who may be still unacquainted with its effects, appliance and mode of action, a book, in which all that is known about it, up to this present writing, is a valuable aid to the filling procedure. This is more particularly emphasized when this book is edited by Prof. Morton, whose lucid description and experiments tended so much to bring it to the attention of the profession.

We commend the work to all who would learn about Cataphoresis, as well as to those who know all about it.

It is a handsome volume, well gotten up, well edited, well printed. The type is large, distinct and clear, and this makes the volume delightful to read, while its size is little larger than a manual.—ED.

**THE AMERICAN DENTAL WEEKLY.**

We do not know of any dental journal which is published weekly. The *British Journal of Dental Science* appears every two weeks. We know the trouble and care it gives, even to prepare and select matter for our issue, which appears only every *two months*, and can fully appreciate the care of a monthly journal, and still more a weekly.

When the *American Dental Weekly* first appeared, although we knew of the indomitable industry and perseverance of Dr. Catching, we felt it would be short-lived. But the journal continues to come despite our inward prognostications, and moreover is always well-filled with short readable articles. Every Monday morning the postman leaves the journal. Rain or shine, storm or snow, it comes to hand, so we may say with Julia in the Hunchback, by Sheridan Knowles :

“I have seen the snow on a level with the hedge, yet still came Master Walter.”

We wish all success to the *Dental Weekly*, and trust it may have a long and prosperous life.—ED.

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**SELECTED ARTICLES.****FORMALDEHYD IN CONNECTION WITH ESSENCE OF GERANIUM IN DENTAL THERAPEUTICS.**

In a paper recently read at the Society d'Odontologie, at Paris, M. S. de Marion spoke very interestingly of his experience in the use of formaldehyd in connection with the essence of geranium in the treatment of dental caries.

The choice of a good antiseptic in the treatment of caries of teeth, he says, is yet one of the main prejudices of the dental profession. None of our antiseptics have given entirely satisfactory results, because the physical structure of the teeth prevents the entering of same under ordinary circumstances, the dentin being saturated with saliva and serum. Experiments have proven that creosote, thymol and many others do not combine with water or saliva, but are simply suspended in the same as little globules and cannot therefore act as antiseptics.

A good antiseptic must be soluble in water, it must be diffusible in order to sterilize the liquid contents of the dentinal canaliculi, and lastly, it must have no bad effect on dentin. Formaldehyd is the first antiseptic having each of these properties. Its action is as follows :

All animal matter, in this case the pulp, disintegrates in the presence of air and its nitrogen and carbon form ammonium salts and carbonates respectively. As chemical disintegration goes on, the ammonium salts being very diffusible, saturate the dentin. Formaldehyd brought in contact with the disintegrating pulp has the tendency to form compounds with ammonium and the carbonates.

As a result of it, formaldehyd is chemically and antiseptically naturalized and absorbed. The process of disintegration goes on until the disintegration is complete by addition of more formaldehyd. Then its antiseptic action on the pathogenic microbes begins

The sterilization of caries is a perfect one, but somewhat slow. M. S. de Marion has had excellent results with the addition of the essence of geranium to stop disintegration of putrid matter at the beginning. All ethereal oils, with exception of this essence, cause soreness and pain of the peridental membrane. Essence of geranium put on the tongue has no burning effect, it has a mild and agreeable smell, stops caries instantly, and diminishes the necessity of applying formaldehyd too frequently.

M. de Marion's antiseptic treatment of putrid root-canals is as follows: He opens the pulp chamber as usual and cleans that as well as the canals of all putrid matter. Formaldehyd is then introduced on shreds of cotton and evaporated with a heated silver wire. This treatment is repeated two or three times at same sitting. A temporary dressing is now made of cotton shreds saturated with formaldehyd and geranium, and the cavity is closed air tight, with wax or gutta-percha. Two or three days afterwards the same treatment is repeated. The essence of geranium serves to find out any putrid matter; left in contact with the same, it changes its mild and agreeable smell, and only when the latter is pure a permanent filling can be inserted.

F. A. B.

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### USES OF PYROZONE.

I have found pyrozone very useful in the insertion of all kinds of crown and bridge work. We all know that bleeding of the gums gives us great trouble in these operations. I obviate this by applying a 25 per cent. solution of pyrozone to the gums, which acts as a styptic, and in my hands has never resulted unhappily. I also use this remedy in the same manner for the insertion of gold fillings at cervical margins, one or two applications rendering the gum perfectly

dry for ten or fifteen minutes, which is ample time for the insertion of an ordinary filling. In the case of abscess with fistulous opening, I use a 3 per cent. solution inserted with a hypodermic syringe, forcing the solution through the fistulous opening, and I find that its use is not as painful as that of proxide of hydrogen. In all cases in which the alveolus has been perforated by the progress of suppuration, and the soft tissues have not yet sloughed, I advise free lancing over the congested parts, and the insertion of a pledget of cotton saturated with a 25 per cent. solution, which should be allowed to remain for a few moments.

For a putrescent pulp, I apply a 5 per cent. solution of pyrozone, which at once disinfects, permitting the removal from the canals of disorganized tissue, without the disagreeable odor which is often so offensive to both patient and operator.

I also use pyrozone for the removal of green stains on teeth, due to organic causes. I use a 3 per cent. solution for this. Apply it with an atomizer, spraying the teeth. I find that this treatment is most efficacious, and also the most pleasant to patient and operator.—  
DR. WETTLANFER, *Dental Practitioner*.

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## SILVER AND THE SILVER SALTS, AND THEIR USE IN DENTISTRY.

Though modern surgery has turned from antiseptis to asepsis, the former is by no means superfluous. Asepsis cannot be obtained in many conditions in which the external circumstances are such that microbic infection cannot be prevented, or where it has already occurred. Moreover, antiseptis often gives us quicker and better results than does asepsis. Especially is this the case in the mouth, the field of our special labors, which is a perfect culture oven of exogenous and endogenous micro-organisms, and where aseptic procedures are entirely inapplicable. We dentists are compelled to rely on antiseptics; and if I propose a new one to you, and recommend it most warmly, it is because of the good results that I have obtained with it in various departments of our specialty.

The ideal antiseptic must possess the following properties: It must be harmless, non-poisonous and non-irritating; it must be fatal to all pathogenic spores and microbes; it must have no deleterious or destructive effect upon the tissues; it must be in a form that renders its application possible in the most difficult localities; and, finally, it

should be sufficiently far-reaching in its effects to penetrate the deeper tissues and destroy the germs that may have penetrated to them. None of our previous antiseptics fulfil these conditions. Crede believes that two new ones, the Citrate of Silver and the Lactate of Silver, really do so ; and his conclusions are confirmed by those of Halsted, Beyer and others. His bacteriological and clinical experimentation in the Carola Hospital of Dresden, have given most surprisingly good results.

We dentists are well aware of the fact that the precious metal, in proper form, hinder the growth of the schizomycetes ; that gold fillings are more resistant and more durable than others. I, with Miller, ascribe it in part at least to this fact, though something may be due to the greater care with which fillings of the precious metals are made. Gold plates are better borne by the oral mucous membrane than those made of hard rubber. It seems to be proven that various metals, more especially mercury, silver, gold have antiseptic properties ; whilst zinc, lead, and iron seem to be quite powerless in this regard. The laboratory experiments and clinical researches of Crede and Beyer were so entirely satisfactory that I resolved to try the new antiseptics in dental work. In the sterilization of root sinuses I thought that they would be specially useful. My trials were made upon teeth with freshly killed pulps, as well as upon those in which the pulps had become gangrenous, and include about 100 cases. And I may state at once that my hopes were not disappointed. The results that I have obtained during the last half year have been entirely satisfactory to me, and I can recommend these preparations to my colleagues in the very warmest manner.

I directed all the patients that I treated with the silver salts to return to me at once, as soon as any pain occurred in the teeth that had been treated. Up to the time of this present writing only three have reappeared with periostitis ; and in two out of these three the defects in the molars were distal and difficult to get at.

My method of root treatment is the following : I open the pulp cavity with a suitable trephine, and if the pulp is gangrenous, clean it out as thoroughly as possible with a thin probe. Then I thoroughly and repeatedly inject out the root canal with a freshly prepared and dilute solution (1-2000) of the Lactate of Silver. Then I apply the rubber dam, dry the cavity carefully with cotton, and then thoroughly with the warm air injector ; to the completeness of which procedure I attach the greatest weight. For I believe that even if dead nerve tissue remains behind, further decomposition and the development of

the gases of putrefaction cannot so readily occur if all moisture is thoroughly removed, and the mummification of whatever of nervous tissue is left behind is effected. Here the powdered Citrate of Silver is of especial value, since it not only permanently disinfects the decomposition products that remain, but acts as a dessicant also in consequence of its powdered form. As is well known, the difficulty in the sterilization of the root canals depends on the difficulty of thoroughly applying the antiseptic to it. I believe that it is best done by applying the Citrate through an insufflator, to the nozzle of which a rubber tube with a very small orifice is attached; this permits the application to be made to all the sinuosities even of the distal canal.

The pulverization is fairly forcible, and if the lumen of the canal is sufficiently large, I do not doubt that the particles of the drug reach the very ends of the sinuses. If the insufflator does not seem to have effected this, I apply the powdered Citrate to the depths of the canal on a thin probe.

Recently-killed pulps I usually fill at one sitting, simply dusting in the Citrate after opening the cavity with a sterilized bur and filling with tin or gutta-percha in the usual manner. When the root canals are putrid I deem it necessary to make two or three applications and insufflations of the Citrate or the Laetate before proceeding to the permanent filling. Is surprising to see in most cases that after the first introduction of the silver salts the odor of decomposition entirely disappears. I have seen no discoloration of the teeth in the cases that have returned to me; it is true, however, that they were all molar cases. Only the cavities were colored black. Irritation symptoms after the applications were never noticed.

I do not claim that this method of the treatment of roots is the only proper one; for there are almost as many different methods as there are practitioners of dentistry. But with these antiseptics I have formulated a suitable and effective method system of treatment.

In conclusion, let me state that I have used the silver preparations in various other diseases. I have used the grey silver gauze in one case of empyema of the antrum of Highmore, and as a tampon for the hemorrhage following extractions, and also the dilute solutions as gargles in stomatitis; and I have obtained like satisfactory results with them.

The comparatively small number of cases over which my experience extends are too few to base a final judgment on. But the good results certainly enable me to recommend that these silver salts be exten-

sively experimented with and tried by others, and I should be glad to stimulate those of my colleagues who have not yet used these antiseptics to do so.—M. HILLE, in *Monatsschrift für Zahnheilkunde*.

## DENTAL REMEDIES.

BY DR. C. G. EDWARDS, LOUISVILLE, KY.

Read before the Kentucky State Dental Association, June 16, 1897.

In the classification of remedies it is difficult to arrange them completely, according to their action on the principal functions.

Of the various groups of medicines, I shall only treat of those which we as dentists are the more directly and practically interested in.

### ERGOT.

Ergot, by reflex action, produces active contraction of involuntary muscle fiber; it therefore acts on and contracts the smaller blood vessels, and its administration is indicated in persistent hemorrhage from the gums, and alveolar hemorrhage after extraction.

### CANNABIS IND.

Cannabis Indica is like opium; in large doses, a narcotic poison, its effect is anodyne. As a topical remedy for preventing pain in extraction, I have used it for more than ten years with very gratifying results in many cases; its action, however, is not entirely reliable. It may be applied on pads of cotton to the gum on each side of the tooth for five minutes before operating; in all cases the gum should be dried before making the application.

### EUCAINE.

The public attention which has been attracted by cocaine renders it unnecessary for me to notice it here except by comparison with a new and rival substance called eucaine. While cocaine is an alkaloid of the leaves of coca, eucaine is an artificial or chemical product. There is no chemical difference between the two substances, the only important physiological and therapeutic action being the difference in their toxic effect. I have used eucaine for more than six months, and have extracted more teeth in that time than I had for several years previously. I extracted nine and eleven teeth, respectively, for two patients at one sitting, using two syringes full on each subject, one a lady of highly nervous temperament and light weight. The strength

of the solution was five per cent. No unpleasant or toxic effect was noticed, and no complaint was expressed by the patient.

Another advantage which eucaine possesses over cocaine, is the more permanence of the solution, and while cocaine is decomposed by boiling the solution for sterilization, eucaine is not. I have kept a solution of the latter for two months and found it as energetic as when freshly made, though in every instance I boil it before using. In reading very many recent reports from the pen of general and dental surgeons, I find expressed a universal and positive opinion in favor of eucaine, as to its equal efficiency in pain-obtuding power, and its very decided freedom from the toxic effects so frequently occurring with cocaine. The only unpleasant effect so far noticed is swelling or puffing of the tissues, in some cases the swelling extending to the cheek or lip; this is unaccompanied by pain or inflammation, and subsides in twenty-four hours.

#### ACONITE.

Aconite is one of the most valuable of known agents in controlling inflammation, as it lessens the force and frequency of the heart pulsation, lowers arterial pressure, reduces the temperature, and stimulates intestinal, cutaneous and urinary secretions. In pericementitis, and in the early stage of alveolar abscess, especially when attended with high temperature, it is a valuable remedy administered internally until its physiological effects are exhibited. Watchful care must be observed in the administration of such a powerful depressant remedy.

Aconite, in conjunction with other remedies, notably iodine, is a well-known topical remedy for pericementitis.

#### OPIUM.

Opium, a narcotic poison in large doses, and an anodyne, is unrivalled for relief of pain, and is a powerful abortor of inflammation. There is absolutely no remedy equal to it to relieve pain and induce sleep; by this action it controls nervous and vascular irritability. Opium also has sedative power when locally applied, as well as when internally administered.

#### PAPINE.

Quite recently a preparation from opium has been introduced, called papine. It is said to have all the anodyne properties of opium, with the narcotic and convulsive elements eliminated, one fluid ounce being equal to one-eighth grain of morphia.

## AMMONOL.

Many new remedies for the relief of pain have been brought out, notably those derived from coal tar, salol, codeine, phenacetine and ammonol being some of the principal ones, all of which possess sedative and pain-obtuding properties, and probably curative effects. Ammonol in ten grain doses, repeated if necessary in an hour or two, has gained considerable favor for the relief of pain in pericementitis, and alveolar abscess; curative properties are ascribed to it by some practitioners. If such is the case, it must stimulate and promote the secretions, especially the lymphatic glands.

## POTASS. IODIDE.

There is another group of remedies, classed as alteratives; agents that produce waste of tissue, destructive metamorphosis. Their function is to modify morbid processes and aid in removal of abnormal deposits by stimulating certain organs and glands to increased activity. These include the salts of potassium, sodium, lithium, ammonium, and mercury. I have used potassium iodide as an alterative in the treatment of pyorrhea alveolaris with very gratifying results, continuing the treatment for weeks after the surgical and local treatment was finished. Potassium salts are diuretic and antacid, and are used especially in the treatment of diseases supposed to be due to insufficient oxidation of the blood-products, or to deficient excretion.

## LITHIUM.

Lithium carbonate and lithium citrate have become popular in the systemic and local treatment of pyorrhea alveolaris, as well as other affections supposed to be the result of deposits of the urates in the affected tissue, which is the case in the gouty diathesis.

## MERCURY.

Mercury has long been employed not only as an alterative, but as a purgative in catarrhal conditions of the intestinal mucous membrane. It is a reliable purgative, and this therapeutic action is often desirable in threatened alveolar abscess. Its action on the liver, with its well-known stimulant action on the lymphatic glands, augmenting their elimination of effete products of inflammation, is a very important factor in controlling the disease, and hastening its termination by resolution.

If dentistry is a specialty of medicine, there can not exist a defined line dividing the practice. They must merge one into the other,

lapping and dovetailing here and there; therefore, we should be fully equipped with a knowledge, not only of the fundamental principles of medicine, but that science which treats of morbid anatomy and physiology, and the application of remedies for relief. There never was a more active period than the present, when the chemist exerted so much energy and intelligence in producing new remedies for the cure of disease and the relief of pain, and in compounding the old and the new into new and convenient forms for administration.

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### WALKING ERECT.

Very few persons walk well. Most of us, if we accept the evolution hypotheses, still retain some of the gait of our apish ancestors. The tot-toddlekin as he begins to balance himself on two feet sways from one side to the other, variably like a monkey. The little girl of six summers, with her pretty new dress on, walks as straight and elegantly as ever she will. Her little feet are thrown forward with an elasticity peculiar to that age. The little girl of thirteen begins to be careless, bends her back forward, and goes diving into the school-room as if she were going to swim. At sixteen, she steps along with short steps, striking her heels hard on the floor with a don't-care-for-nobody sort of walk. At eighteen, she thinks more of gait, and tries to recall that of her earlier childhood. The boy of eleven, with his new thick boots, plants his foot like a soldier, and never knows that his boots disturb anybody. Many children are taught at home and at school to walk on their toes. This will do in a sick-room, when one has squeaking shoes, but it is not natural or elegant. Put the heels down lightly at first, and the toes last; this keeps the body erect, instead of bending the body forward as a person must bend who walks on his toes.

Walking should be more thoroughly taught in our gymnastic schools. Dr. Dip Lewis made a specialty of it in his training school in Boston, but his successors have done little to perfect his methods. —*Jour. Hygiene.*

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### BREATHE PROPERLY.

Do you know what an "active chest" is? Probably not, answers a writer in the *New York Tribune*; but your chest ought to be active—that is, lifted up—two thirds of the time you are awake. Stand up and take a long breath, as long as you can; now lift your

chest; keep your chest up while you go on breathing by movements of the abdomen and the muscles at the side of your waist. A very slight movement is all that is necessary for normal breathing; but now you have let your chest fall! You are so tired you can't hold it up! That shows a very bad, unnatural state of things; the normal human being, whenever he is not relaxed, walks with his chest up, and when he talks with vigor or interest, it is with his chest up; and you can't hold up yours three minutes without fatigue—you can't do it at all, for five! Do you know that the preservation or achievement of a round, slender waist will be your reward if you will strengthen your muscles and learn to keep your chest up? It will certainly, except as you become hopelessly fat, and even then good breathing will do much to preserve some good outlines in your figure. Proper breathing and the habit of keeping the chest up will keep all the internal organs in their proper place and keep them from spreading the waist in any way that is unsightly, and shows not Greek health, but deficient vitality. The first thing is to get so you can hold the chest up. Walk across the floor three times, holding up your chest (just as you do when you try to fasten a tight skirt band), at the same time breathing deeply from the abdomen. After the three times you are exhausted; rest and try it again; to-morrow you can, perhaps, do it four; don't tire yourself, but keep at it till you have strengthened the muscles that hold your chest up, just as you would strengthen the muscles of your arms, with use. Always practice out-of-doors or with your windows up; there are many good breathing exercises and but few can very well be conveyed in print; but the main thing is very simple; breathe with your chest up, and keep on doing so till you do it naturally, all the time that you are not relaxed in rest.

One good exercise that can be taught is to simply stand and take as long a breath as you can, chest well up, and then hold it as long as you can. This exercise used for a few minutes every day is most beneficial, and physicians recommend it for strengthening and expanding the lungs.

Professor Tyndall said that, as a broad, general rule, any air out of doors was better than any air indoors. Breathing exercises are most effective outside the house, and generally they are not conspicuous even on a city sidewalk.—*Scientific American*.

## PRACTICAL PLACE.

## AN ALLAYER OF PAIN, AN ANTISEPTIC AND A LOCAL ANÆSTHETIC.

Dr. S. C. G. Watkins, of Montclair, N. J., said at a meeting of the First District Society of the State of New York: "A few months since I reported before this society my experience in the use of *ammonol* for allaying pain in cases of pulpitis and periostitis. I now wish to make a farther report of my experience of its use in similar cases up to this time. In nearly all such cases I am able to control the pain and comfort the patient. The following will, I think, illustrate its efficiency: A patient complained of soreness in the upper front molar, which had been crowned; she had been kept awake for several nights, and was unable to locate the pain positively, though it was in the tooth which had the gold crown on. I administered fifteen grains of ammonol, and directed her to take ten grains each hour until she had taken three or four doses, unless the pain was relieved sooner. After taking three doses she was entirely relieved, and had a good night's sleep. About four o'clock in the afternoon of the next day the pain returned. I again administered ammonol in the same way, and as a result all pain ceased, and the patient had a good night's sleep. The following day, towards evening, the pain returned. I then examined the case carefully, and discovered a large cavity in the posterior surface of the second bicuspid, with exposed pulp, which faced the gold cap. I applied a temporary dressing for two or three days, using ammonol as a sedative. I then capped the pulp and filled the tooth with oxyposphate without pressure or causing any pain. Next day the toothache followed, and to quiet the pain I again resorted to ammonol, which acted just in the same way that it had previously, so that she lost no sleep, and never suffered more than an hour or two at a time.

In this case I presume the pulp was congested and dying. I have described it for the purpose of showing how we can control pain, which has baffled us all in the past, with a simple remedy, and I hope others will use it as I have, and be able to report similar good effects.

Another preparation is tripromphenol-bismuth, an antiseptic to take the place of iodoform. It is non-irritant and soothing in its action, and has none of the unpleasant odor of iodoform. I have used it in many cases with uniform success, and am quite confident that it will reduce inflammatory conditions in the treatment of pulpless teeth. I used it in conjunction with a liquid antiseptic. I have used trikresol, formalin, oil of cinnamon, and other liquid antiseptics with

it by pumping it into the canal to its entire length. I rarely treat a tooth but once.

When the canal is filled with the tribromphenol-bismuth in pasty form, the canal is filled with a rope of cotton, the cavity filled with gutta-percha, and allowed to remain a week or two, or longer, until all inflammation has passed away and the tooth has recovered; it is then filled permanently at the next sitting without farther treatment. Tribromphenol-bismuth seems to hold its strength; will not deteriorate or change. I have seen it for several months at a time in a canal, and when removed it seems to be as sweet and pure as when placed in the cavity.

As a local anæsthetic for the extraction of teeth, I have been using of late a new preparation of eucaïn, called eucaïn B, which is superior to the ordinary eucaïn A—it is stronger and less irritating. The toxicity of eucaïn B is much less than eucaïn A, and very much less than cocain.

With eucaïn A I use a seven per cent. solution; with eucaïn B not more than a four per cent., and it is said that a one or two per cent. would be sufficient. I would inject a quarter of a syringeful on each side of each tooth, and then wait for a minute or two for anæsthesia to take place before extracting. I have used it quite freely, and have not seen any bad effects from its use.

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#### SILVER NITRATE IN SUPERFICIAL DECAY.

While this is not a new subject, yet is not old enough for all that is good about it to have been said. We make extracts from some remarks reported in the *Stomatological Gazette*. Dr. Cox says there are many cases where a patient will come, showing a little white streak just above the border line of the gum on the buccal surface of the molars or bicuspids. It is simply superficial. My advice in those cases is not to put on the rubber-dam, but simply a napkin in the mouth to keep the moisture from the teeth, dissolve a little nitrate of silver, rub it on that streak, and play hot air from the syringe on it, and notice the result.

On the same line D. Van Orden suggests, in addition to the above, to paint the gum with tincture of iodine, which will form iodide of silver, and it is quite an important addition for preventing the spreading of nitrate of silver. It can be very easily done. Take little pellets of cotton, roll the cotton and paint the tooth. Have a good supply of these at hand, lay them on a little glass slab, several of

them, in case of necessity, so that they can be applied to the tooth.

In treating many cases of third molars, Dr. Whitney makes use of silver nitrate. He says when excavating a third molar, at first you think there is very little decay; then, as you go on, you find this white condition extending on and on, and finally, perhaps, the whole buccal surface has been cut away. Now, in such a case as that, when a tooth is in that condition, I always, before putting any filling in, saturate that with nitrate of silver, unless it is quite near the pulp. In that case I cap the pulp with cement, and then use it about the border, and I have had excellent results in that class of filling.

A new way of applying the silver solution is reported by Dr. Bliss, as follows: In the preparation of nitrate of silver for superficial decay, I dissolve it in alcohol, then place in the solution particles of asbestos, not powdered, but the coarser kind we usually have in the market; afterward drying the particles of asbestos. It can be applied very easily. I also find it better to apply the rubber-dam before applying the nitrate of silver, and wait fifteen or twenty minutes, or perhaps longer.—*American Dental Weekly*.

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#### MIXING ALLOYS.

Dr. Black says: I do not care how you mix your alloys for filling, provided certain rules are employed. The first rule is this: the more tin you have the less trituration you should give it. The more silver you have the more trituration it demands, for the reason that the alloys with large proportions of tin dissolve in mercury much quicker than alloys with small proportions of tin. You should not manipulate or chop up your alloy in your cavity with your instrument. After you have once squeezed it out you want direct compression of it, hence fillings rubbed in with a burnisher are never so strong as fillings pressed in with a broad serrated point. Furthermore, I would say that I never wash amalgam.

Dr. Black says mercury is in no way responsible for the shrinkage of amalgam.

This is not the general opinion.—Ed.

It is thought best to file the alloy up from the ingot as it is wanted.—Ed.

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#### STICKING STOPPERS.

To prevent the annoyance of sticking stoppers in varnish bottles, coat them with glycerine.

### SUCTION CAVITIES.

Suction cavities should be used in but few cases; the plate should fit by adhesion of contact, atmospheric pressure.

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### AN INTERESTING CASE.

I would like to report the following peculiar case which occurred in my practice recently. The patient, a young lady of excellent health, presented herself for the treatment of a second left superior bicuspid. Arsenic was applied and the cavity sealed with cement. One week intervened before I saw my patient, at which time the pulp in the crown of the offending tooth was removed. That which remained in the canal showed unmistakable signs of life, and arsenic was again applied on a few fibres of cotton and sealed as before.

Owing to failure on the part of the young lady to keep her appointment, she did not visit my office for two weeks. I examined the tooth and found it somewhat loose in its socket; removed remaining portion of the pulp and treated canal with carbolic acid; saw patient two days later; tooth had grown looser; three days later patient presented with tooth ready to drop out. I removed the tooth with my fingers without the slightest force; the tooth was white and clean; no hemorrhage followed the extraction, and the root was devoid of membrane; a probe introduced in the socket elicited no painful sensation whatever; burred the socket out to the depth of a thirty-second of an inch and treated. Neither the gum adjacent nor the mucous membrane was affected in the least by the arsenic; wound healed readily.—DR. W. E. DIEFENDERFER, in *Dental News*.

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### TO CONTROL HEMORRHAGE AT APEX OF ROOT AFTER REMOVAL OF PULP.

Wet a needle of bibulous paper in bichloride of mercury and insert in canal. Will control hemorrhage every time.—J. Y. CRAWFORD, in *Alabama Dental Association*, 1897.

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### THE DISCOVERY OF SAL AMMONIAC.

The inhabitants of the deserts of Lybia were, in olden time, inadequately supplied with common salt; their alchemists accordingly manufactured a substitute from camels' dung and named it Sal Ammoniac—"Salt of Ammonia"—in honor of Jupiter Ammon, whom they worshipped.

## ATHLETICS VS. FRESH AIR.

What a man of to day needs most is not athletics in a gymnasium, but plenty of fresh air in his lungs. Instead of a quantity of violent exercise that leaves him weak for several hours afterward, he needs to learn to breathe right, stand right, and sit right. The young man or young woman who starts on a career of training and keeps it up year and year, just at the time when the body has a great deal of its own work to do and wants to do it, may make up his or her mind that beyond a showy and superficial development of muscle and strength, all this training in after life is going to count against them. —*Annals of Hygiene.*

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## DENTAL EDUCATORS.

It is not too much to say that our professional reputation must be what our colleges make it. We are the educators of those who are to be the leaders in the future. The next generation of dentists will be what we shall make it. Legislators may pass laws to regulate and restrict dental practice, but the stream can rise no higher than the fountain head, and the practitioner of to-morrow must get his training and derive his professional knowledge from the school of to-day. He must enter the profession by submitting himself to our guidance. The colleges are the fountain-head, and the stream will be limpid or foul according to whether we purify or contaminate it — W. C. BARRETT, in *International*.

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## HOW ONE MANICURE READS THE NAILS.

People of bilious temperament have red and spotted nails, and so do martial men, delighting in war. Where you see these red nails you may be sure that the person possessing them is easily irritated, though apt to get in a good humor just as easily.

There is a superstition to the effect that white marks on the nails denotes misfortune, but there is nothing in it. These white marks that schoolgirls call beaux merely show that there is too much acid in the system.

People with very pale nails are subject to much bodily infirmity, and if you observe them closely you will find that they always have a grievance. — *Exchange.*

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## FOR SENSITIVE DENTINE.

When the sensation in a hyper-sensitive tooth is being complained

of as unbearable, the application of one-tenth of a grain of the citrate of cocaine will yield gratifying results.

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#### HOW TO TAKE IMPRESSION OF MOUTH WITH UNDERCUT TEETH.

In taking impressions of mouth, where teeth are undercut so much that a "drag" is likely to result, I find the following method answers perfectly: Syringe and cleanse the undercut tooth, mix some plaster of paris thin, fill up the undercut with it, allow the plaster to harden, and then trim up; smear the plaster with a little vaseline, then take the impression, and afterwards remove the plaster from the undercut, which has remained.—*Ohio Dental Journal*.

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#### RECEPTACLE FOR DIRTY BURS.

Take any suitable small vessel, cup or box, nearly as deep as the length of an engine bur, fill it nearly full with small shot. When using the engine burs, instead of laying the used or dirty ones on the table, stick them in the shot. It keeps them bright so far as the shank is concerned, and the office attendant knows that all burs in the shot have been used and are to be cleaned.—JAMES G. PALMER, New York.

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#### STROP FOR BURNISHERS, SPATULAS, ETC.

Dr. Gordon White, of Nashville, makes a strop for burnishers, spatulas, etc., by gashing a thick piece of sole leather and filling with pumice-stone. With this strop the instruments named can be easily polished.—*American Dental Weekly*.

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#### SHOCK.

In case of shock a hypodermic injection of strychnia, containing one twentieth of a grain of the sulphate, should be immediately administered, and repeated every half hour until three doses are given. Then the same quantity is injected every four hours, until the patient has recovered from the shock. If he recover at any time previous, the injections are discontinued. In chloroform narcosis an injection is given immediately prior to the administration of the anæsthetic, and the same rules followed as in the case of shock. There is no choice as to the point at which the injection is made. Any portion of the integument which is convenient will do. It is only necessary

to be careful that the injection is properly made and the full dose administered.—*Exchange*.

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#### EUCALYPTUS TOOTH PASTE.

|                         |     |        |
|-------------------------|-----|--------|
| Precipitated chalk..... | 160 | parts. |
| Powdered soap.....      | 45  | "      |
| Wheat starch.....       | 45  | "      |
| Carmine.....            | 1   | "      |
| Oil of peppermint.....  | 2   | "      |
| Oil of geranium .....   | 2   | "      |
| Oil of eucalyptus.....  | 4   | "      |
| Oil of clove .....      | 1   | "      |
| Oil of anise.....       | 1   | "      |

Mix, and mass with equal parts of glycerine and alcohol.—*Pharm. Post*.

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#### WISHING AND TRYING.

Wishing does nothing; trying does everything. Your education would never be accomplished by wishing; it is only by trying that we succeed in what we wish to obtain.

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#### IGNORANCE.

Ignorance was carried away from the very gates of Heaven, borne through the air and thrust in at a door in the side of a hill, where the steps led down to hell. But give ignorance time and if earnestness be the incentive ignorance will become knowledge.

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#### THE FOLLY OF PRIVATE INTERPRETATION.

Laws are made, and it is intended they should be obeyed in the sense they are enacted, not in the sense of the private judgment or interpretation of each individual. Why, then, should it be when God—who is the great law giver—makes a law for our moral guidance, that we should interpret it to suit our ideas?

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#### DIFFICULT PARTIAL IMPRESSIONS.

Several weeks ago a lady presented, desiring a partial upper denture. An examination of the oral cavity revealed a V-shaped arch

with several sound teeth, posteriorly and anteriorly. Wherever possible I prefer taking plaster impressions in partial cases ; I, therefore, proceeded in the usual manner to get a plaster impression. The teeth were at unfavorable angles, seriously interfering with the work. After several unsuccessful attempts and spending considerable time in trying to patch together broken pieces which were more intricate than a Chinese puzzle, I hit upon the following method : That portion of the plaster which came out intact, viz., the palatal surface, festooning teeth lingually, and partially covering the ridge where teeth were absent, I replaced carefully in the impression-tray, flowing *very* soft plaster where the first impression had been imperfect. I next passed the tray and plaster quickly into the arch, retaining it in position until the new plaster had set in. The cup was then easily removed, the new plaster fractured cleanly and in large pieces, some, however, remaining cemented to the original impression, making it a simple task to reunite the whole. The result was a perfect model of all the teeth, ridge, palatal surface, and condyles, from which I made a well-fitting plate.—HOMER HEBERLING, D.D.S., in *Items of Interest*.

We think it would have been better and more certain if the palatal part of the fractured impression had been replaced in the mouth and fresh plaster put into the impression tray, and then an impression over this taken. It is difficult in passing an impression, in the way suggested, to get the first impression in exactly the same place. What would prevent the new plaster added to that replaced in the tray from running over the former impression when it was carried to the mouth and pressed into place?—Ed.

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#### REMEDY FOR CORNS.

Dr. Sofshue says linseed oil is a sure remedy for both hard and soft corns. If they are indurated and very painful, the relief it gives in a short time is most grateful. Bind on a soft rag saturated with linseed oil, and continue to dampen it with the oil every night and morning till the corn is removed easily and without pain.—*Science News*.

THE

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## PETER FAUCHARD. 1728.

Peter Fauchard, surgeon-dentist, was born in Brittany about the end of the 17th century, in 1690, and died at Paris on the 22d of March, 1761. He studied his profession under Alexander Potileret, who was surgeon general of the navy, and established himself at Nantes, where he soon obtained a reputation so extensive as to call him to Paris. The practice of dentistry had almost entirely been relinquished to the hands of ignorant and unscrupulous men, and to quacks; but Fauchard possessing superior talents, his acquirements soon brought him in the front rank with men of intelligence and made him celebrated even in the French capital. The observant nature noticed in this man, even in his earliest youth, made him reflect that up to this time, the science of dentistry was transmitted, if one may use the expression, only by oral delivery and by manual exemplification. He entered upon the theory of the diseases of the teeth and the operations necessary to them, and a work *ex professo*, published for the first time at Paris in 1728 under the title: "The Surgeon Dentist, or a Treatise on the Teeth wherein is taught the means of properly caring for them and keeping them in a healthy condition, to embellish them, to supply their loss, and to cure their diseases, as well as the diseases of the gums and the accidents which may unexpectedly attack neighboring parts or teeth, illustrated with 42 engravings on copper plates, in 2 vols., duodecimo," was put forth by him.

This book was reprinted in 1746, and, after the author's death, again in 1786. On its appearance it gained the approbation of anatomists, physicians and surgeons of the greatest intelligence, and holds even to this day the reputation it commanded then. The imperfections which are now seen in it, attest the progress which the art of dentistry has made; but the work will nevertheless be consulted with advantage by all those who would be, like Fauchard, good dentists. Before the publication of this treatise there was no work which explained the manner of filing and shaping the teeth, of filling and cleansing the

teeth; the art of constructing artificial teeth was not explained, simple or complicated dentures had not been written about; and the making of obturators covering palates, defective by disease or congenital malformation, was unrecorded. Fauchard described with singular exactness the abscesses which attack the internal parts of the teeth without changing their cortical or outer substance—doubtless alveolar abscess. We may regard him as a most inventive genius, a father of dentistry, a man far ahead of his time. The younger Mr. Sue, in his eulogy of Devaux, said that this clever writer was far from being useless to Fauchard in the editing of his work. From the works of the younger Sue we glean that Sue was quite an authority whose criticism is to be respected, nevertheless the criticism does not depreciate the value of Fauchard's work. Many men are capable of *doing*, few are capable of *expressing*, their ideas. This assertion, even though the help of Devaux were proved, would not in the least diminish the merit of Fauchard's inventive genius or his wise conclusions.

"Fauchard's work," says the medical Biography, "is an incontestable proof of his capacity as well as his deep research and profound knowledge in this branch of surgery which, unfortunately, seems to have been relegated exclusively to a crowd of men who were singularly deficient, actual exotics in the first elements of the healing art, and who followed, or aped each other, in the blindest practice. This work has been regarded even in our day, and with justice, as the best exhibition which we possess on the subject which it treats."

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## REMINISCENCES.

### A PERSONAL CONTRIBUTION TO THE HISTORY OF DENTISTRY.

By THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

Sometime about the year 1823, as was related to me by my mother, there arrived in Charleston, S. C., a German dentist by the name of Eswine. Dr. Eswine had letters of introduction to Dr. Simmons, a physician of considerable repute and practice in the city, who referred him to my grandmother for entertainment.

I am not able to say how long Dr. Eswine remained in Charleston, whether his practice prospered, or relate much about him, more than the following: My mother related to me that she was sent to Dr. Eswine to have her teeth put in order, and that his bill was in part paid from the charges made by my grandmother for his entertainment. She also said that he was rather rough, both in his manipulation

as well as in his language; for while working for her, not finding her mouth wide enough open for his convenience he told her to open her mouth in not very select language. "*Ouvre ta guele*" (open your jaw), which he pronounced with the German-French accent.

About the year 1830—the year that I was born—a family arrived in Charleston, who had emigrated from Stockholm, in Sweden. The name of this family was Monefeldt. The family consisted of a widow, with several daughters and a son, whose name was William Stockton Monefeldt. My father, uncle, aunts, as well as my mother, her sister and brother became very intimate with the members of this family, all of whom were about the same age.

The coming to Charleston of this family, I have understood, was brought about by the merest chance. They had had the most terrific weather during their passage and had given over all hope of ever gaining land, but during a lull in the storm, the vessel being in a latitude between Charleston, S. C., and Savannah, Georgia, the captain asked his passengers which port should he make? One of the family finding on board a geography book, turned to the descriptions of South Carolina and Georgia, when the following sentence arrested attention: "Charleston is noted for the hospitality of its inhabitants." The poor family, buffeted about, as they had been by gale after gale for many weeks, longed for a haven of rest and the sentence seemed to respond to the yearnings of their hearts; thus the unanimous vote was "to make for Charleston."

Despite the boisterous weather, young Monefeldt conceived a liking for the sea, and for some years, I have been told, pursued the avocation of the sailor. What influence changed the trend of this fancy I know not, but during my apprenticeship with him in later years I learned that he had taken up the profession of dentistry, having been instructed in the art somewhere at the North; but in what State or with whom, I never learned. He told me the art of swaging plates on zinc dies and lead counter dies had been taught him.

Some time in the year 1832 Dr. Brewster arrived and established himself in Charleston. I was too young to have any personal recollection of him, and only knew of him by what I had heard related by my parents. He had taken rooms on King street—one of the principal streets in the city—not far from Queen street, over the jewelry establishment of Mdme. Boudo.

Here it was that young Benjamin Rodrigues, who had been a student of medicine with Dr. Frost, and who afterwards graduated at the

South Carolina Medical College, got instruction in the art of dentistry, with Dr. Brewster.

There were no dental colleges established at this early date, and the only means of instruction was obtained by private tuition.

Young Rodrigues showing a greater taste for mechanical pursuits than for medicine, offered himself to Dr. Brewster, and obtained from him instructions which fitted him for practice.

In a recent number (the December, 1897, number) of the "Items of Interest," Dr. Rodrigues Ottolingui—a grandson of Dr. Benj. A. Rodrigues—presents the diploma which Dr. Brewster gave to him as a testimony of his proficiency.

Dr. Brewster did not continue for many years practice in Charleston. Whether this was from the fact of not finding business sufficiently active there, or because he had hopes of larger returns elsewhere, we hear of his resigning his practice to Dr. Rodrigues and establishing himself in Paris, France.

Among the patients for whom Dr. Brewster operated was young Middleton Michel. His father, Dr. Wm. Michel, had sent his son to Dr. Brewster to have such of his teeth filled as needed attention. Middleton Michel could not have been more than a boy at the time. In after years he took up the practice of medicine and became quite an eminent physician. He related to me that on the occasion of his visit to Paris, he called on Dr. Brewster but did not introduce himself, merely saying he had called for professional service. Dr. Brewster after seating him in his operating chair proceeded to examine his teeth, going into ecstasies over the work which he saw in his unknown patient's mouth. "By George" said he, "these teeth are well filled. I see but little to be done for you. Whoever you employed has done his work so well as to leave little for me to do. We find a pleasure to praise good work, and although it may not be polite to ask the name of your dentist, I think, when I have no fault to find with his operations, you may divulge it."

At this point Dr. Michel made himself known to Dr. Brewster and recalled to him how, when, and where he had himself filled his teeth in the office he had at the time, in Charleston, over Mdme. Boudo's store. There was a hearty laugh over the recital, with rather a blush over Dr. Brewster's face at his having lavished such praise on his own work.

Dr. Rodrigues and my preceptor, Dr. Monefeldt, were contemporaries. I remember the former well, he having operated for me, as well as

enjoying a very extensive practice among the best families of the city and State.

I imagine Dr. Monefeldt must have established himself in Charleston in the early forties—in 1843 or earlier.

His office was located on King street, over a druggist's store kept by a man named Oakley—not many houses removed from the one formerly occupied by Dr. Brewster. He soon established a fine practice and did excellent work. He was able soon to purchase a fine house higher up in the city but on the same street. He used the building for a residence and office, renting the store to a Mr. Moffat as a dry goods establishment. He never married, although a very handsome man. Whether this state was enforced by the circumstance of his wishing to do for his sisters, who, like himself, had been left orphans, I know not; yet I imagine this not to have been the case, since they, while young, taught as a means of livelihood, and all three of his sisters afterward married. He may have assisted them.

In 1847 I was placed by my father with Dr. Monefeldt to have him teach me dentistry. The Baltimore College of Dental Surgery had been established in 1840—but the intimacy existing between Dr. Monefeldt and my father no doubt prompted the latter to prefer the instruction that he could give me individually over what I could obtain in a class at the dental college. Besides those were the first years of the college, and being only seventeen years of age, my parents may not have been disposed to let me out of their sight.

My apprenticeship was passed for two or three years in the laboratory. It was the custom then to pay for instruction, but I know that Dr. Monefeldt never exacted any pay for what he taught me.

I never could fathom his idea of instruction; but for over a year I was kept at carving teeth out of pieces of ivory. He had, as many dentists at this time had also, a number of human teeth kept in bottles in strong brine, which I was told were obtained from corpses. One of these teeth, generally an incisor or cuspid, would be given me as a model, and I was directed to file, cut, scrape or grind the piece of ivory until I should have made as close imitation of my natural model as was I capable. Some of these early attempts, I recall, were "abortions." After this I was directed to fit a block of ivory to a plaster cast. This was accomplished in the same manner as it is accomplished *now* by the Chinese dentists. The model was painted with "India ink" and the block of ivory tried on. Whenever the India ink left a black mark on the ivory, this mark was cut out with gouges, scrapers or burs. This was continued until the block

was reduced to a pretty accurate fit, when the upper surface was filed so as to approximate it to a plate. On this plate human teeth were mounted. Such plates were retained either by ligatures tied to teeth adjoining, or by means of clasps riveted to the ivory plates.

I say I could not fathom his idea in keeping me at this, since this style of work had long since become obsolete in this country, gold and silver plates having entirely superseded it; unless it was to give me practice in the use of tools. Nevertheless it had the effect of making me skillful in carving, for about 1849 the South Carolina Institute for the promotion of skill in mechanical arts was established, whereat I deposited a specimen of "carving in ivory." This consisted of an upper and lower set of teeth carved from a solid block of ivory, which was considered so favorably that the judges awarded me a silver medal for it.

Charleston boasted at this time of quite a number of dentists. There was Dr. Rodrigues, Dr. Monefeldt, Dr. D'Alvigny, a Frenchman, who afterwards removed to Atlanta, Georgia, and Dr. Houston. In later years these were increased by Dr. Solomons, who was a pupil and I believe a nephew of Dr. Rodrigues; Dr. J. B. Patrick, who was a pupil and successor of Dr. Houston, and myself a pupil of Dr. Monefeldt.

Before the establishment of these, a Dr. Parmlee visited Charleston annually, and did considerable dentistry in Charleston as well as on the sea islands adjoining, where, I have understood, he made a lucrative practice among the wealthy planters of these islands.

The extraction of teeth was, at one time, the only treatment for these offending organs, and was confined chiefly to medical practitioners. Long after the advent of Dr. Brewster, Dr. William Michel enjoyed much of this practice. His mode of procedure was quite primitive. No operating chair embellished his waiting-room on Queen Street. A sufferer was seated on the wooden settee when the offending molar was examined and waited until the operator was ready. The patient was then directed to stretch himself or herself on his back on the uncarpeted floor; "Primus," the man who drove the doctor's buggy, was the assistant. Primus' duty was to kneel at the head of the patient, placing the palms of each hand on the sides or cheeks of the patient, while the doctor straddling the patient's prone body applied the forceps. When he was ready to dislodge the tooth he cried out "PRESS!!!" and forthwith Primus pressed with both hands until the poor patient felt as if the skull would be crushed in. One pain seemed

to counteract the other, for it was generally admitted that Dr. Michel "pulled" teeth with little pain.

About the time I was with Dr. Monefeldt, Dr. J. B. Patrick was pursuing his studies with Dr. Houston, whom he succeeded, Dr. Houston, I believe, returning to the North.

All the tools, files, teeth and other materials were obtained generally through druggists who kept a small stock of these for sale. Impression cups were made by tinmen who made these according to the patterns furnished them, or by the direction of the dentist. I still have one of these tin impression trays which was made for me by a tinman about 1850. A painter named Simmons, who sold putty, glass, paint, whiting, glue, &c., furnished most of the dentists of the city with Abbey's gold foil, but many ordered it in one or two-ounce lots from the North.

Dr. Cleveland, a druggist, kept a stock of teeth, files, excavators, pluggers, &c. The teeth were kept in bulk. Incisors, cuspids, molars, bicuspid all mixed together. There was no discrimination as to shade, side, size or length. All were heaped promiscuously in tin boxes. The selection of a set of teeth for a given case was attended with considerable labor. The size, side, shade and character all had to be selected from this promiscuous lot, which entailed the loss of much time without that certainty as to shade and character, which was afterwards attained, when manufacturers placed the teeth in sets on card wax.

Dr. Cleveland, the druggist, had a brother who was a dentist, and who had his office over his brother's drug store. He was a very skillful plate workman and beautiful specimens of his gold plate work were exhibited at the first fair of the South Carolina Institute, the fair at which I had exhibited my specimens of carving in ivory. It is this Dr. Cleveland who laid claim to the *central* or suction chamber. But although the chamber is known as "the Cleveland chamber" the claim was not allowed by the judges, for the following reasons: Suction chambers had been used on plates in France, and I remember having seen some of these plates where the suction chambers were placed on the ridge of the gum on each side, and this plan had been used by some of the dentists of the city. Dr. J. B. Patrick, however, had a plate to make for one of his patients, but the dread which this patient had of having the roots which remained, extracted, was so great that she vowed she would go without teeth rather than submit to the extraction. Under these circumstances he thought over the matter and wondered why a suction chamber placed in another locality would not do as well as on the ridge? Acting on this idea he

made the plate for the lady with a central air chamber, which proved an eminent success.

On inquiry it was proved that Dr. Patrick's use or invention of the central air chamber antedated Dr. Cleveland's. This was known and testified to, as it happened that the plate was made for the wife of one of the judges; but as the witness could not be "called into court" to show Dr. Patrick's work without exposing the lady to the general knowledge of wearing artificial teeth, Dr. Patrick would not push his claim, and this chamber is still known as the "Cleveland chamber."

The Cleveland chamber was constructed differently from other central air chambers used then and since. "The Blind Cell," as it is sometimes called, was made by stamping the plate of one piece, using an elevated pattern of the cell on the die. With the Cleveland chamber, a cap or cover was swaged over this pattern, this part of the plate being cut or filed out. The advantage claimed was that a closer adaptation and a more perfect exclusion of air could be secured with it.

I recall, about 1849, first seeing some porcelain teeth to be used as substitutes. They were monstrosities in size and shape. They had no resemblance whatever to human teeth, being fully as large or larger than a man's thumb nail, which they resembled more than they did human teeth. In color they were of a greenish gray, while the enamel which was flowed over their outer surfaces was largely covered with minute bubbles, apparently of some vitreous substance. They were scarcely one eighth of an inch thick. The backs of these teeth seemed porous and were not covered with enamel as the fronts were. The backs of these teeth were provided with a groove extending from the cervical edge nearly to the cutting edge. This groove was provided with three or four platinum pins, which could be bent over a piece of flat gold wire, which was fitted into the groove, designed to secure these teeth both to the plate as well as to the wire which was fitted into the groove. I never saw any case where these teeth were ever used. Their shape admitted of extensive grinding, in order to reduce them somewhat to a natural size to make an approximation to the size of human teeth. But their color and shape was so abominable, that I never saw any case where they could be employed.

Dr. Blandy, or Blanding, of Columbia, South Carolina, introduced his cheo-plastic method, which was favorably received, but as he left the States shortly after its introduction and left no formula for his metal, and as vulcanite was introduced about the same time, the latter superseded it.

Dr. Rodrigues, I think, was the first to use vulcanite and mount

artificial teeth on this base. To him also may be accorded the first "obturator." Although this latter was a simple construction, being only a gold plate swaged over a fissure in the roof of the mouth or hard palate of his patient, it nevertheless was most effective in improving the speech of his patient, who was unable, before this plate was made for him, to enunciate distinctly on account of the air passing from the posterior nares through the mouth or the reverse.

In the matter of continuous gum work Dr. Monefeldt made the first effort to introduce it in Charleston. A Dr. McIlvane, purporting to be the agent of Dr. John Allen, sold the right for the City of Charleston to him, and exhibited specimens of the work. The process was explained, and a muffle being procured a furnace for fusing the body and gum enamel was constructed in the laboratory. But whether the furnace was badly constructed, or the process not carried out as it should have been, even the specimen cases which were tried proved utter failures. The material cracked in every possible way, peeled from the platinum plate and was most unsightly. Several cases were made in the effort to improve our knowledge of it, but none of those we experimented with approached in the smallest degree the beautiful specimens which were exhibited. Without more experiments than possibly six or eight cases, Dr. Monefeldt abandoned the work, being better remunerated by his practice at the chair than by experiments in the laboratory, and quietly submitted to the loss of the fee which he had paid for the license.

The workman who preceded me had left the employ of Dr. Monefeldt, so that now all the dental laboratory work devolved on me. While the other workman, and student, remained it was I who ran all the impressions, made the articulating models (made then entirely of plaster of Paris)—brass articulators not being in vogue at the time—moulded the dies and counter dies, selected the teeth, and did much of the work in the laboratory besides the carving of ivory teeth, of which I was heartily sick. Now all the work was done by me, and there was no time for "carving teeth," I doing, yearly, in the laboratory alone, fully five thousand dollars worth of gold-plate work.

In 1852 I established myself in the practice of dentistry, since which time, with the exception of my service in the Confederate Army, I have pursued the calling.

I recall the coming of Dr. John Holt to Charleston. Dr. Holt advertised extensively "painless dentistry," and in a few weeks his office was so besieged that no one could obtain an appointment; so that I believe he and his assistants were constantly employed. This

state of things interfered seriously with me, as well as others who were just starting, or whose practice was not well established. But the old saying, "It is an ill wind which does not blow some good," Dr. Holt had cast his net and made his haul. Arsenic had aided him in establishing his claims to painless dentistry, but when he left Charleston, to practice his rascality on other communities no doubt, then the dentists of the city had their hands full in treating the cases of alveolar abscess which his monstrous use of this irritant subsequently provoked.

During the continuance of the war, being stationed at Adam's Run, a place about thirty miles from Charleston, where we were detailed for garrison duty, General Evans asked the captain of our company if among his men there was a dentist. Captain Walter replying in the affirmative, I was dispatched to the city for my case of instruments. Gold fillings were wanted but I had no gold foil; the depreciation in the currency was such as to forbid its purchase; but Confederate money was plentiful. Corresponding with Messrs. Brown & Hayse, of Atlanta, Georgia, who kept a dental depot, I shortly after this procured of them one ounce of gold foil for which I paid them *fifteen hundred dollars* in Confederate money, some of which I had after the war closed, the demand for gold fillings being so few, as well as my opportunities for practicing dentistry at all, prevented its use, so that the bulk of this ounce of gold foil remained in my hands and was used for "Post Bellum" operations.

The days of dental engines had not yet arrived, and in preparing a cavity of decay the bur and excavator were the only instruments used. I remember seeing a hole, near the root of the right fore finger on the palm surface on Dr. Monefeldt's hand, induced by the constant use of the bur. A hard, leathery skin had formed here as callous as the finger nail, by the constant friction of the handle of the instrument, making a socket as well defined, if not better than the subsequent "bur thimble" invented at about this time.

Although there was no law then to prevent men who had studied dentistry under private preceptorship from practicing the calling, nevertheless the establishment of dental colleges induced many to obtain the diplomas they offered after attending their lectures and submitting to examinations. I believe Dr. W. S. Brown, of Charleston, who had been doing Dr. Monefeldt's artificial work after I left, was the first dentist in the city to work under the authority of a diploma received by him from the Baltimore College of Dental Surgery. A diploma had been conferred on Dr. J. B. Patrick by the New Orleans

Dental College, and in 1872 I received a diploma, after examination, from the Pennsylvania College of Dental Surgery.

I believe it will be cheerfully admitted, that to my efforts was due the establishment of our local dental organization, "The Charleston Dental Society," which, up to the time of my change of residence, induced by the destruction of my office by fire, was kept in successful monthly meetings by my persevering efforts.

The first dental engine which I recall was Green's Pneumatic Engine. Dr. Patrick had purchased one of these at a dental society which he had attended, and on one occasion lent it to me to cut down and polish a contour gold filling which I had inserted. The device consisted of a bellows worked by the foot. From this a rubber tube extended connected with a handpiece. The working of the bellows forced the air through the rubber tube which, acting on the machinery in the handpiece, caused the revolution of a mandril to which the cutting tools were affixed. It was not, however, very popular, as it lacked power, was fatiguing to work, and besides this made such a buzzing noise as to be very disagreeable.

I recall, some thirty years ago, the small book, of not more than one hundred and fifty pages, written and published, I think, by Dr. James W. White, on "Dental Materia Medica." It was the only work of the kind on this subject that was put into the hands of the dentist, and was necessarily crude; yet, how I devoured its contents! It was no doubt the pioneer or instigator of Prof. Gorgas' more extensive and elaborate work on "Dental Medicine."

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### THE AMALGAM QUESTION.

BY THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

We were rather impressed with some of the views advanced by Dr. Charles H. Taft in his paper, "The Amalgam Question," and dentists with "Yankee Wit" read before the American Academy of Dental Science. In some of these we must accord; in others they meet our condemnation.

In the first place we must unequivocally condemn any recourse to trickery in the exercise of our calling. Such a resort has no excuse either to cover up incapacity or to carry out our ideas of what should be done. If we consider that amalgam be the proper material to use for a certain case we should use it, and a surreptitious dealing to carry out our opinion should be condemned. "Honesty is the best policy" *always*, and will ever meet the approval of all good

men. If patients be more inclined to trust the opinion of their physician than their dentist, the dentist should either reject such patients or resign such cases altogether. We are either professional men or we are not. It is to be presumed that when patients employ a dentist, they do this with a full confidence of the dentist's ability to serve them; that he, the dentist, is fully competent to tackle the cases offered, as well as to discriminate as to which material is best for the case presented. Or if the dentist take the case, preferring to yield his opinion to the opinion of the physician (who frequently knows nothing about it) which we consider pusillanimous, he should do it with the distinct understanding that he will be in no way responsible for the result.

Nothing esoteric, nothing secret, nothing underhand should be countenanced. No rolling up of sheets of gold foil, no exhibition of gold cylinders, no forming of gold into mats or pellets, while he secretly fills the cavity with amalgam should be sanctioned by any whose good opinion is worth having; so we must agree with Dr. Taft that "Yankee wit" and all "Snidery" are to be condemned.

In the next place we must admit that there are certain susceptibilities, incomprehensible as they seem, which appear to be born with us and are difficult to overcome. We have heard of persons being affected by eating strawberries, but have never met with the idiosyncrasy, and conclude if it exist at all, that it exists in such an infinitesimal degree that it is not worth mentioning. The other instance brought forward by Dr. Taft, of the man who would be seized with a vertigo, or be affected with a violent headache might be put down as one in a million. We have likewise heard of persons who are so affected by the odor of roses that they are rendered unconscious when the odor is detected. We are more disposed to attribute these peculiarities to the imagination than to the stern reality. People can work themselves up into such beliefs that they imagine themselves sick when they are in perfect health. I remember when I was first married my wife got into one of these nervous imaginary conditions, from the death of our first child, that she was in a pitiable condition. I had a magnifying mirror which I used for shaving. She would put her finger in her mouth to hold down her tongue and with the mirror examine her throat and uvula. She would appeal to me as to the inflammatory condition her throat was in, because of the increased size reflected by the mirror. I could see no inflammation and would tell her she imagined disease where none existed. My mother humored her more than I, so that her consultations were more

with her. She would even go to sleep at my mother's house, because she found more sympathy with her mother in law—(which was rather anomalous—mothers-in-law being generally tabooed). Then she would read attentively the papers advertising "patent medicines," and conclude that every symptom delineated by these nostrum venders was her own. She got worse, contracting a hacking cough, with a creeping chill at the least breath of air. I took her away and consulted a physician in the small village we went to. The physician, a sensible, straight-forward man, examined her carefully and told her he could see no evidence of disease at all, "but," said he, "your stomach is out of order, not from disease, but from something you have been taking." She then told him how she had been taking Cod Liver Oil, for her cough. "You have no cough," said he, "it is the Cod Liver Oil which has produced this hacking cough. Stop it at once, and you will need no further advice from me." The birth of a second child took her attention from herself and she got entirely well. She afterwards admitted to me that she had taken 12 quart bottles of Cod Liver Oil; two and three tablespoonfuls at a dose, and that frequently the stomach would be so nauseated that it would return to the mouth only to be forced back. Thus will persons be influenced by the imagination.

A case is on record of a lady so susceptible to the odor of roses that she would go off in a dead faint at the *odor* of these flowers. Going to a reception she saw a lady with a large bunch of these flowers on her "corsage." Immediately she fainted and had to be taken into an adjoining room where restoratives were administered. When she recovered sufficiently to speak she was asked by those present, among whom was the lady with the offending roses, what was the cause of her fainting? Was it weakness? Was it the heat of the room? "No," she replied, "neither of these. It was that lady (pointing), or rather the roses she wears at her waist. I have a peculiarity about the odor of roses. They make me faint when I smell them." "Then," said the lady, coming forward, "my roses cannot be the culprits, *as they are artificial* and have no odor."

Again we have the record of another case of imagination.

A man was condemned to death, and, some physicians wishing to try the effect of the imagination, requested the authorities to aid them by delivering the culprit over to them. They told this one that he had to die, but that they wished to save him a painful death and would just open the veins of his arms and legs until he would painlessly bleed to death. In an adjoining room tanks were fitted to

the walls from which small rubber tubes led, these being filled with tepid water about blood heat. The culprit was blindfolded and led into the room where he was strapped immovably to a cot. The surgeons now pricked the flesh while the tepid water was permitted to trickle on the arms and legs and drop into receptacles below. The utmost silence was maintained. The surgeons speaking in whispers, yet loud enough for the victim to hear, the talk bearing on the condition of the man, and every now and then coming to feel the pulse—and whispering that the man was growing weaker and weaker. The result recorded was that although the man received only four pin sticks, he actually died from the effect of imagination believing that he had bled to death. This may be thought an overdrawn case but it is on record.

In the same way we believe there are persons who can be made to believe that they are affected by certain influences which experiment will entirely refute.

We heard of a case of a poor woman who was sick, almost to death, from the most violent nausea. Two homeopathic physicians were in attendance, and after diagnosing and consulting for some time they determined that her trouble existed solely from her idiosyncrasy to the mercury contained in the rubber plate she was wearing. They told her they could do nothing for her as long as she wore that plate, as it was without doubt she was affected by the mercury in the plate, and if she must have artificial teeth she must have them mounted on a gold plate. In her circumstances a gold plate was out of the question. They promised to do what they could for her, and accordingly on their next visit, told her to go to Dr. ———, that he was a kindly-disposed man and would take her circumstances into consideration and not charge her more than the expenses. When Dr. ——— saw the case he asked her how long these physicians had been attending her. She said about three months, that the trouble she suffered from was caused by the mercury in the plate, and that she never would be better unless she had a gold plate. "Well," said Dr. ———, "you go home, and when your physicians come to see you again tell them I say mercury is not the cause of your trouble, that you will not have to wear a gold plate to ameliorate your condition, and that you can still wear your same rubber plate, and that what they have been fighting over for three months, I will cure in fifteen minutes." Dr. ——— saw that the whole cause of the constant and excessive nausea was due to the plate encroaching on the soft palate, and by simply cutting away the plate until it rested on the hard palate, the

case would cure itself, which it did. So much for this diagnosis of mercury.

Dr. Taft depreciates amalgam because amalgam fillings contain mercury. But where one person may be affected by mercury, a thousand may not be, and we very much doubt if the small proportion of mercury which an amalgam filling contains would ever affect any one. Yet we believe the homeopath contends it takes an infinitesimal part of the drug to produce its effect.

Dr. Taft says he has a patient, or knows of a person so easily affected by mercury that if the cork of a bottle containing the bi-chlo. of mercury be left out, and this person enter the room, he would be immediately affected by the infinitesimal fumes, and consequently, for such persons, it would be out of the question to insert an amalgam filling. Such a man is certainly to be commiserated. How does he comb his hair or tie his cravat? He must certainly use a looking-glass; does not the mercury on the back of the glass affect him? It would seem so, since the infinitesimal vaporization from the bottle does this. Is he not a hypochondriac?

We recall a case of a fine operator who refused to use gold at the earnest solicitation of his patient. The patient was persistent, doubtless egged to the operation by one of the "gold fiends" who consider that gold is the sole prophylactic for filling teeth. Time and time again he came to the charge, and time and time again the dentist refused, until the patient, either of his own opinion or the insinuations of the "gold fiend," believed his dentist *incapable* of this style work. The patient had lost his back teeth, and did all his chewing on the sixteen oral teeth which remained to him, namely, from the first bicuspid from one side to the other in each jaw. These teeth had been considerably worn, and the "gold fiend" proposed to restore them with contour gold fillings, which he did for the patient, when this one found that *his* dentist would *not* do it. After paying a very heavy fee, the patient returned to his dentist, eighteen months later, with his beautiful contour fillings flattened out like lead bullets subjected to the blows of a hammer. Amalgam inserted under similar circumstances would have served a better purpose. Under these circumstances I wish to stand up for amalgam, as I know that it holds a valuable place.

Because an infinitesimal number of persons may be affected by mercury, which we are inclined to doubt, and rather often disposed to attribute to the imagination, are we not to use it? Because a few

may be affected by eating strawberries, are strawberries not to be eaten?

The position is untenable.

If Dr. Taft wishes to condemn the use of amalgam when the patient asks for gold and inserts amalgam "on the sly," then I am with him; but if he wishes to taboo amalgam I am against him. *Unguibus et rostro.*

### REPORT OF THE NEW JERSEY STATE DENTAL SOCIETY.

The twenty-eighth annual session of the New Jersey State Dental Society convened at Asbury Park, at 10 o'clock, July 20th, 1898.

After the usual preliminaries, the President, Dr. J. L. Crater, of Orange, read his annual address. He gave a brief review of professional progress, noting especially matters of local interest, and spoke at some length of the new dental law, and explained the object of the changes made. While it was not just as they would like it to be, he thought, in the light of passed experience, it would prove an improvement over that which it superseded. The address was short, practical, and to the point.

The remaining time of the session was devoted to business.

At the afternoon session, Dr. Allison R. Lawshe, of Trenton, read a paper describing a new sectional block for vulcanite, or other moulded or cast bases. The section exhibited was simply a gum section block of three front teeth. The teeth belonging to it had been ground away and plain countersunk teeth fused on in their place; the change was very neatly done. It was, of course, merely an extemporized model illustrating the essayist's idea. While it may give a little more natural form to the palatal surfaces, it will not, I am impressed, be nearly as strong, or as generally useful, as the usual form of front blocks. It is merely a modification of a thousand and one suggestions to the same purpose that have been proposed from time to time.

Dr. Wm. J. Wallace, of Glen Falls, N. Y., followed with a paper upon "Practical Experience with a few Homeopathic Remedies in Dental Practice." So far as your reporter could understand, he simply used a few of these remedies to reduce inflammatory conditions, or to combat systemic conditions inimical to dental treatment, or to relieve pain.

Dr. Frank G. Gregory, of Newark, N. J., read a paper upon "An Effective Method of Treating Chronic Alveolar Abscess, and Molars having Exposed Pulp Difficult to Extirpate."

His method was, in short, to extract the abscessed teeth, reduce the length of the root, and, after promptly treating the tooth and socket, replant. The molar teeth he treated in much the same way.

At the evening session a paper was read, written by Dr. I. P. Wilson, of Burlington, Iowa, entitled "A Study of the Physiological and Pathological Conditions of the Apical Portion of the Cementum." The discussion turned largely upon the safety of leaving arsenic in contact with pulp tissue more than a few days, and also its ultimate effect upon the tooth tissue and surrounding parts, when permitted to remain a long time within the pulp canal. I noted no new points brought out by the rather long and animated discussion. The speakers, for the most part, merely related their own opinions and experiences, and saw little to commend in those of others.

This was followed by a paper by Dr. J. A. Wass, of Hammonton, N. J., upon "My Experience with Pulp Mummification." This was a real practical paper. The writer had for two years followed the method of pulp mummification suggested in the *Dental Cosmos*, Nov. 1895, page 922, and referred to some sixty cases, embracing all kinds and conditions of teeth, which he had treated by that method, most of which he had been able to keep track of, and they had, without exception, remained comfortable, and, so far as he could see, promised to be perfectly successful. He exhibited quite a collection of extracted teeth with roots so formed that they would bother the most expert operator to perfectly cleanse and fill to the apex their pulp canals, some extremely long with curves at critical points, others with peculiar curves, others again with a multitude of small roots whose canals emerged from the central cavity in most unlooked-for positions and directions. They were a suggestive object lesson.

Of course, the method was pronounced unscientific, and dire disaster prophesied, and many reasons given why it could not, and should not, prove successful; and why it was not good practice. The essayist, however, very well held-up his end of the argument. Having in so many cases succeeded in making the teeth perfectly comfortable, finding that they remained so, and finding the practice much more satisfactory to him than his previous efforts in extirpation and filling, he was disposed to continue the practice of mummification until he found better reasons for changing than those so far suggested.

The next morning, July 21, two papers were read, the first by Dr. W. G. Chase, of Philadelphia, Pa., entitled "Alveolar Abscess and Caries of the Maxilla." The second by Henry H. Merrell, Ph. D., M. D., of Chicago, entitled, "A Plea for the More Scientific and Careful

Study of *Materia Medica* as a Branch of Dental Education." The discussion of both these papers turned upon the right and the advisability of dentists assuming to prescribe for systemic conditions more or less associated with dental lesions, or to assist dental treatment. The legal rights, the professional rights, and the politic rights of encroaching upon general medical practice were thoroughly discussed. While the two extremes of the question had advocates who vigorously stated and defended their views, those who thought it was a matter calling for careful and discreet judgment presented decidedly the best and strongest arguments.

The afternoon was devoted to clinics. The following were noticed by your reporter. It is quite probable he may have missed others of equal merit. Dr. A. Irwin, of Camden, N. J., presented a case in Orthodontia, a mouth particularly crowded, which he had markedly improved with a still farther improvement by extracting and expanding, using for the latter purpose a bar attached to the back teeth and extending around the upper front teeth, capping the molars to facilitate the upper front teeth moving outward to assume their proper place in relation to the lower incisors.

Dr. C. de Trey demonstrated the workings of solila gold.

Dr. Joseph Head illustrated a method of replacing the molars of the lower jaw when required on one side only. He constructs a plate resting upon the gum under the teeth to be supplied and extending two or three teeth farther front. To the inside of these teeth, one, two or three, as may be judged best, he makes a clasp approaching very nearly the form of a half cap, fitting the lingual surface, and to the buccal surface a clasp embracing one or two teeth near the gum line. This makes a device that remains firm, and comfortably resists the pressure of mastication. The doctor said that he had made many pieces constructed in this way, and that they had uniformly given satisfaction.

Dr. W. H. Pruden, Paterson, N. J., exhibited the use of a gutta-percha washer between the root and a porcelain crown, the object of this washer being to more thoroughly protect the cement from the solvent action of the saliva.

Dr. H. C. Register, of Philadelphia, exhibited and explained his method of using a ribbon matrix, of using bibulous paper in inserting and condensing gold, showing its use with both foil and crystal gold. He also exhibited a method of sterilizing teeth in the mouth by means of formaldehyde gas, hoping by periodically thus treating teeth in mouths, where decay is rampant, to lessen its ravages. He

covers as many of the teeth as may be convenient with the dam, pressing it well down towards the gum so as to include all portions of the teeth liable to caries. He then gathers the free portion of the dam together so as to form a kind of bag enclosing the teeth. Into this, by means of suitable appliances, he passes the gas, providing means of access and egress so the teeth are surrounded by an atmosphere that destroys all forms of germ life. This gas is particularly penetrating and a reliable germicide. He hopes by thus treating all the teeth in the mouth at suitable intervals, to prevent the formation of those colonies of destructive germs so ably demonstrated by Dr. Williams to be the initial cause of dental caries.

Dr. F. L. Fosheim, of New York, demonstrated a method of fastening loose lower front teeth. He first made along the cutting edges of the teeth a shallow groove, then at a convenient point drilled into each tooth, in line with the axis of the tooth, a small hole about an eighth of an inch deep. He next fitted to the cutting edge of each tooth a platinum cap, burnishing it well into contact at all points, then soldered to this cap a pin passing into the hole. This cap covered the cutting edge only, and is not intended to extend farther over the tooth. When all are fitted, they are placed into position and by suitable means held together, removed, invested, and firmly soldered so as to form a strong continuous cap or band fitting accurately the cutting edges of the teeth, with a pin passing into the hole in each. This is then cemented in place.

At the evening session, Dr. William H. Trueman, of Philadelphia, read a paper entitled "The Evolution of Dental Materia Medica," in which he traced the use of remedies for the treatment of disorders of the teeth from a remote period. He read extracts from a medical work written in 1514, giving the crude ideas then held regarding the teeth and their diseases, and some of the peculiar remedies in vogue. Of these, he said, camphor, acetic acid, alum, and alcohol, and a few aromatics, are about all that have continued in use. He then read from a work published in 1679, upon the teeth, by a French apothecary, showing a better knowledge of the disorders of the teeth, and a line of treatment more in accord with present practice. This writer was well acquainted with nitrate of silver, sulphuric acid, oil of cinnamon, and oil of cloves, and used them for much the same conditions and in much the same way that we do. He then gave a resume of a portion of chapter V, vol. I, of Fauchard's work, giving his classification of diseases of the teeth, showing evidence of that writer's better acquaintance with the character, structure, and surroundings of the

teeth. With this came, as a matter of course, a more intelligent use of remedies. He thus demonstrated that in the interval between 1514 and the time Fauchard wrote, 1728, dental materia medica had become a science.

At the morning session, July 23, Dr. H. C. Register, of Philadelphia, read a paper outlining a proposed method looking to the prevention of caries by some such means as suggested by his clinic.

The closing hours of the session were occupied by society business.

The meeting, as a whole, may be considered a successful one. We missed several who have been for years constant attendants. Some have passed away, and others, closing long and well spent lives, are waiting their call. We were particularly pleased to note the youthfulness of a majority of the essayists, and a more than usual proportion of youthful faces among the audience. The list of members, as given in the neatly gotten-up programme, is about 104, and at this meeting about half a dozen more were elected. We consider this an excellent showing.—W. H. T.

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[THIRTY-FOURTH PAPER.]

## LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

Q. Should the patient return complaining of severe pain after the application of arsenic, how would you act?

A. If the tooth were a young one, or one highly organized, I would use all means to suppress the inflammation which was doubtlessly caused by the irritating nature of the arsenic.

Q. What would be those means?

A. I would cleanse out the cavity; free it of all trace of arsenic, and ease the pain by the application of chloroform, camphor, hydrate of chloral, hydrochlorate of cocaine, carbolic acid, oil of cloves, any of these, or other agents, until I could obtain quiet. If the patient were in a highly nervous state from suffering, I would prescribe one, two or three antikamnia five-grain tablets, administered every hour, and a five-grain Dover Powder tablet on retiring for the night.

Q. In teeth of the young, or in very vascular teeth, is not the application of arsenic apt to produce these results?

A. In such teeth these results may be looked for.

Q. Why?

A. Because the arsenic is rapidly absorbed and a very small quantity of the agent is required in these cases.

Q. Have any suggestions been made to prevent the pain caused by rapid absorption?

A. It has been suggested that by combining the arsenic with powdered charcoal and then forming it into a paste the rapid absorption may be controlled.

Q. What has to be considered in making an application of arsenic to destroy a pulp?

A. The density of the tooth and the age of the patient.

Q. How much of the pulp should be devitalized?

A. At least two-thirds. It is difficult to so make an application that will effect this exactly; but by a careful diagnosis of the character of the patient, the age, nature and density of the tooth, and the quantity of the agent used, an approximation may be arrived at.

Q. Is arsenic soluble in carbolic acid?

A. It does not seem to be, for after considerable trituration of the two the arsenic sinks leaving the carbolic acid above.

Q. How is arsenic generally used now?

A. It is formed into a paste with morphia, iodoform, hydrochlorate of cocaine, etc., by moistening one or more of these agents with the oil of cloves or carbolic acid.

Q. Is the addition of morphia to the arsenic attended with any beneficial results?

A. It was at one time thought that it obtained an analgesic effect, and reduced the pain of the arsenic; but it is now regarded useless in procuring this benefit. Nevertheless it has been proved in very many cases that the application of morphia quiets toothache, and is one of the best applications to quiet inflammation and as a forerunner to the application of arsenic.

Q. When the cavity exists on the proximate side of the tooth, what should be the procedure before the application of the devitalizing agent?

A. The rubber dam should be applied so as to isolate the tooth, and thus prevent any danger of escape of any of the arsenic on the gum at the interdental space, whereby a sloughing would ensue.

Q. Suppose the tooth to be so decayed and the cavity so shallow as to afford no lodgment for the retention of the arsenic next the exposed pulp, how is this to be retained?

A. By means of ligatures wrapped around the tooth tying in the application.

Q. What other means have been resorted to?

A. A small quantity of arsenic is applied, retaining this with a little oxyphosphate cement. This application is intended more to deaden a portion of the dentine so that this may be cut into a cavity for the better retention of the arsenic than the broken walls or shallow nature of the case at first permitted.

Q. How long should the arsenic be permitted to remain in contact with the exposed pulp?

A. Twenty-four hours have been deemed long enough, although a longer time is frequently required.

Q. Can the pulp then be removed painlessly?

A. Sometimes it can, but often it will be attended with considerable pain.

Q. Why should it give pain if it be dead?

A. There is a portion of the pulp still alive at the end of the root, and it is when the dead portion is forced against the live portion by the insinuation of the nerve broach, or when the live portion is severed from the dead portion by the barbs of the nerve broach entangling themselves in the dead portion, which cause the pain.

Q. Is it best to remove the dead nerve at the time of the removal of the devitalizing agent?

A. It is thought by some operators that it is better to wait for a time, until there is a partial sloughing of the pulp before the removal is attempted; that by thus waiting less pain is inflicted.

Q. How is the pulp removed?

A. A barbed broach is insinuated into the root as far as possible when it is rotated, thus severing the live part from the dead.

Q. Are all these nerve broaches made alike?

A. No. Some are barbed along the shank, others have but a single hook or barb on the end, while still others are formed like a spiral or corkscrew.

Q. Which of these styles remove the nerve best?

A. Each has its advantages. It is difficult to decide as to which is best, as with all three styles we have failed at times to remove the nerve.

Q. When the nerve cannot be removed with broaches what has been recommended?

A. To knock it out.

Q. How is this done?

A. An orange-wood twig is whittled down to a size approximating the size of the nerve to be removed. The point of this is entered

into the root canal. A sudden blow on the protruding end of the twig drives the stick up to the foramen and thus destroys the nerve, as the nerve is generally found adhering to the stick when this is withdrawn.

Q. Is this not a severe operation?

A. The quickness with which it is accomplished renders it not nearly as painful as the gradual insinuation of the nerve broach. Patients for whom it is done complain less of the knocking out of the pulp than of its removal with broaches.

Q. Suppose the stick should break in the canal, what then?

A. It may readily be drilled out.

Q. Is this operation practicable in all teeth?

A. It is not; but it may be performed on any of the six front upper teeth, in one of the roots of the first upper bicuspid, and the palatal root of the upper first and second molars, also on the lower cuspids and the lower first and second bicuspid.

Q. When the nerve has been removed, should the roots be filled at once?

A. Considerable difference of opinion exists on this subject. It is thought to be safest to place a temporary stopping in the roots steeped in oil of cloves, or eucalyptus oil, and fill the crown with red gutta-percha, and thus let it rest for a time.

Q. What objection is raised to this plan?

A. The advocates of delay in filling contend that there is a collection of lymph in the canal which might invite putrefactive action, which the antiseptics used would check; while those favoring immediate filling contend that the insertion of the filling would check this collection of lymph and would arrest it altogether. Dr. Litch recommends that before the filling is inserted a heated broach should be freely passed into each root so as to dessicate the contents of the canals, should any be present.

Q. Does the application of arsenic ever fail to devitalize a pulp?

A. Repeated applications of arsenic have been made to an exposed pulp, and have even been pricked into the organ, yet has failed to act on it.

Q. Should the pulp be very difficult or painful of removal, and the operator averse to the knocking out process, is it best to wait for entire decomposition before attempting its removal?

A. Such procedure is considered very reprehensible and should be condemned. There are means now of removing any pulp painlessly, or with comparatively little pain.

Q. When the pulp dies without the application of arsenic to destroy it, what becomes of it ?

A. The pulp becomes disorganized and putrescent.

Q. May not this condition occur *without* as well as *with* exposure ?

A. It may.

Q. How would you define such a case when the pulp died without exposure ?

A. Death from extrinsic causes.

Q. Please to give an example of death from extrinsic causes.

A. As the word implies, the death was caused from *outward causes*—the word extrinsic meaning outward. A blow, a fall whereby the tooth was brought in violent contact, resulting in the death of the pulp.

Q. Are these the only cases of death from extrinsic causes ?

A. The pulp may be killed from violence used by regulating appliances, or from the sudden change of temperature induced by very hot or very cold food carried through metallic fillings in the vascular teeth of young persons.

Q. Is the death produced by the action of regulating appliances the same as the death produced from thermal changes ?

A. The death produced by the action of regulating appliances is generally attributable to strangulation at the apical foramen, while the death from thermal changes is more attributable to repeated shocks.

Q. When the pulp of a tooth is thus killed, is it generally the cause of great pain ?

A. It is not generally the cause of great pain. Indeed, pulps may be thus killed and the tooth remain perfectly comfortable and quiet for years.

Q. Do they always remain quiet ?

A. They do not ; but are liable to result in the most violent pain without any accountable cause.

Q. Should one of these teeth be a front tooth, which has resulted in discoloration, would it be proper to attempt the restoration of the color of the tooth by the treatment for this ?

A. This would be a question ; for in opening into the pulp chamber in order to remove the septic matter, preliminary to the bleaching of the tooth, the risk of causing violent pericementitis, and the intense suffering it entails is scarcely warrantable, and should not be attempted without informing the patient what might be the result of such procedure.

Q. What might happen besides the pain induced from meddling with these cases?

A. The condition of the system must be considered, for if this be in a depraved state, besides pericementitis and alveolar abscess, necrosis could result.

Q. What, then, is a good rule to guide us in these cases?

A. To leave well alone. To use our efforts to relieve pain and not meddle with cases that are quiet, and would result in violent pain, possibly a worse condition by such interference.

Q. Are all teeth with dead pulps subject to these conditions?

A. They are; but teeth which have their pulps entirely enclosed, either by being free from decay or having only small cavities, which have been filled, are more liable to assume these severe conditions.

Q. When such teeth take on these conditions from whatever cause, what is the treatment?

A. The pulp chamber must be opened by drilling through the enamel and dentine, or through the filling, should it have been filled, in order to give vent to the septic matter within this chamber.

Q. Suppose the tooth to be an upper first or second molar, with a filling on its disto-masticating surface, would you approach the pulp chamber through the filling?

A. If the filling were in perfect condition, and did not involve a very large portion of the tooth I would not disturb this, but make the opening through the masticating surface. If, however, the filling were in a poor condition and was of such a size that a new opening would materially affect the strength of the tooth, I would then approach the pulp chamber by removing the filling. If the case were any of the oral teeth I would approach the pulp chamber through the palatal surfaces of these teeth, drilling in the direction of the long axis of the tooth.

Q. How will you determine when you have entered the pulp chamber?

A. The drill, finding no obstruction when it reaches this point, will suddenly sink into the pulp chamber.

Q. What will ensue then?

A. There will sometimes be the exudation of pus, or a powerful odor of putrescence ensuing.

Q. What is then done?

A. The pus is permitted to flow until it shows signs of ceasing, when it is wiped out of the cavity by means of a probe wrapped with cotton floss, and afterwards with some antiseptic mixture, such as

carbolic acid, oil of cloves or eucalyptas. In the case of excessive putrescence there is nothing which controls this and neutralizes the odor more promptly than electrozone or meditrina.

Q. What is next to be done ?

A. It is best to do nothing more at this sitting, but simply to seal the cavity vent *lightly* so as to prevent the ingress of food.

Q. What is done next, after relief has been given by drilling into the pulp chamber as above indicated ?

A. The putrescent pulp is removed and the canals treated in the manner usual for such cases.

Q. What is this treatment ?

A. The odor of putrescence must be eliminated and then the case treated with carbolic acid, salicylic acid, boracic acid and such agents as will prevent further decomposition.

Q. Who has taken one of the most intelligent views of such cases ?

A. We are indebted to Prof. Litch, of Philadelphia, for a very clear expression of such cases.

Q. What does he say ?

A. "A careful discrimination must be made between the powers, respectively, of such antiseptics as carbolic acid, creosote, oil of cloves, oil of thyme, oil of cajiput, etc., and such other antiseptics as chlorine, bromine and iodine, which, in addition to their antizymotic power, are true chemical antagonists of those sulphuretted-hydrogen compounds of which putrefactive gases are constituted, such gases being immediately decomposed by them, their hydrogen elements going either to the chlorine, bromine, or iodine, to form, respectively, hydrochloric, hydrobromic, or hydroiodic acids, the sulphur being in each case precipitated.

"This can be readily demonstrated by acting upon a small portion of ferrous sulphide with dilute sulphuric acid, and passing the sulphuretted-hydrogen gas, which will result from the reaction, through tincture of iodine. A milky precipitate of sulphur will at once appear, and at the same time the characteristic color of the iodine will disappear in consequence of the conversion of the iodine into hydroiodic acid, a heavy, colorless gas, which remains in solution in the water present in the alcohol of which the tincture is made.

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"If the sulphuretted hydrogen is passed through the strongest possible solution of carbolic acid, no such precipitation of sulphur occurs ; no change either in the appearance or chemical constitution

of the the carbolic acid is manifest. \* \* \* \* No matter how thoroughly the odor of putrefaction in a room or in a tooth may be masked or disguised by the characteristic odor of carbolic acid, creosote, oil of cloves, or, indeed, any antiseptic oil, the gases are none the less present, although their odor is neutralized; the disinfection is apparently not real. The further formation of putrefactive gases may be prevented, but the decomposition of those already formed must be accomplished by those chemical agents bromine, chlorine or iodine."

See *Dental Cosmos* for February, 1882.

[TO BE CONTINUED.]

### BOOK NOTICES.

**ORTHODONTIA, OR MALPOSITION OF THE HUMAN TEETH; ITS PREVENTION AND REMEDY.** By S. H. Guilford, A. M., D. D. S., Ph. D., Professor of, Operative and Prosthetic Dentistry and Dean of the Philadelphia Dental College; Author of "Nitrous Oxide," etc. Approved by the National Association of Dental Faculties as a text-book for use in the schools of its representation. Third edition, revised and enlarged. Philadelphia: Press of T. C. Davis & Sons, 529 Commerce street.

The book of Dr. Guilford is worth its weight in gold to the dental student and practitioner who desire to inform themselves on the subject of Orthodontia, as well as to refresh their ideas as to meeting the difficulties, or selecting the appliances by which these may be combatted, or rendered subservient to what is desired to accomplish.

Besides the attractiveness in its general make up, namely in typography, etc., the language is so clear, the descriptions so lucid, the points so well chosen, and the cases cited of such every-day occurrence, that the work embodies the whole subject.

Many of the cuts are comparatively new, clear, well executed and aid to the greatest extent in the comprehension of cases to which they refer.

The chapters on the "construction of regulating appliances, with the necessary tools, etc.," as well as their gilding or electrical embellishment, are far from being the least merit of the work. He indeed would be "dumb" or "clumsy" who could not, if he possessed only mediocre manual dexterity, manufacture for himself an appliance suitable to the case he would be called on to treat.

We honestly commend the work to all dentists interested in the subject of "Orthodontia."—Ed.

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**A COMPEND OF DENTAL PATHOLOGY AND DENTAL MEDICINE**—containing the most noteworthy points upon the subjects of interest to the dental student and a section on emergencies, by Geo. W. Warren, A. M., D. D. S., Chief of the clinical staff, Pennsylvania College of Dental Surgery, Philadelphia; Editor Richardson's "Mechanical Dentistry," etc. Third edition illustrated. Philadelphia: P. Blakiston, Son & Co., No. 1012 Walnut street, 1898.

We notice in this, the third, edition of this work a marked improvement on its former editions. While the subjects treated are necessarily but brief allusions, the explanations are terse and give the gist of what may be more extensively eliminated in works devoted to each particular subject.

The section on Dental Medicine takes in review all those materials which come into almost daily use, explaining their action, effect, components, properties, etc.

In a small compass the book contains much which the dental student should know thoroughly, which is readily accomplished because all is divested of extraneous matter.

The section on emergencies may be very well to incorporate with the work, yet the subject of "artificial breathing" is one only learned by actual demonstration and could only be illustrated by means of the recent invention—"the Cinematograph."

We rather approve of these "Compendia," because, if the student be really in earnest and desirous of learning, they are the "sign-boards" directing him to further, deeper, and more thorough knowledge.—Ed.

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**A TREATISE ON PLATELESS DENTURES**—Dr. C. A. Samsioe, of Stockholm, Sweden, writes us: I take the liberty of sending you by this post (May 25, 1898), a copy of my little work: "A Treatise on Plateless Dentures," etc., etc., etc.

As the work has not come to hand up to the time of our going to press, no review can be made of it.—Ed.

## TIMID CHILDREN.

M. LUKENS LONG, D. D. S., Philadelphia, Pa.

The impression made upon the mind of a child during its first visit to the office of a dentist, will probably have an influence for good or for evil through life, showing the necessity of our making it one to be remembered with pleasure.

In the first place, you should try and gain the confidence of the child. Many will not even allow you to look in their mouths, and you must use some stratagem to accomplish your purpose. Show them a bottle of tooth powder, let them smell it, and ask if they are not pleased with it. Pour some in a small dish with a few drops of water. You will soon find your patient watching your every movement. Have two pieces of orange wood sharpened like a lead pencil prepared beforehand and in convenient reach in your cabinet, one of them short and fitted to your paste polisher. Dipping the long piece in the tooth powder, say to the patient I will now proceed to clean your teeth and you will find the operation so pleasant that you will consider it a great favor to be allowed by your parents to visit the dentist. Give them a handmirror and say watch me while I do the work. Commence on a central incisor very gently at first, but gradually increasing the pressure until you can remove any accumulations on its surface. With a pellet of cotton dipped in water, wash the tooth clean. Probably at the sight of the dressing pliers they will exclaim "now I know you are going to pull my tooth." You will say, how could I pull a tooth with this small instrument. I only show you how neatly we do this, or would you prefer my getting a washrag to wipe it off?

I will now place this mouth mirror back of your teeth and when you look in your glass you can almost see through them. For an examination of the teeth, sharpen the orange wood stick, dip it on the tooth powder, gently rub it over their whole surface, and with the point you can easily detect any cavities of decay, unless they are small and it would be better to defer the use of an explorer till some future appointment. Take the shorter piece and rub it lightly over the teeth to show there is nothing dangerous in it, and say I will place this in the handpiece of a dental engine and you will see that it revolves so rapidly that it will accomplish a great deal of work in a very short time. This porte polisher will hold it securely. With the point clean between the teeth and near the gum margins, but for the front of the teeth the most satisfactory thing I have ever used

is a small felt wheel, as that material will absorb and retain moisture, and the powder will become embedded in its surface. As there is none small enough sold at the depots, you can purchase a large thin wheel and with a tube punch make one the fourth of an inch in diameter, cut out as many as the material will allow with a sharp knife, slice each piece in two or three small wheels. The cost you will find to be so slight that you will never be tempted to do such a great wrong as to use one of them on a second patient.

The tapering screw mandrel with shoulder is a convenient tool for carrying them. Dr. Wood's rubber caps, if they were smaller, would be an excellent thing; but even the smallest, if not used with the greatest care, will lacerate the gums fearfully, especially on the lateral incisors.

Probably by this time the patient has become accustomed to having the teeth "played with," and, finding you are very careful not to do anything that will give pain, you can commence with your felt wheel, dipping it occasionally in the wet tooth powder which you will have in convenient reach on your table. You will soon find your patient enjoying the work by the remarks: "I like this. Isn't this splendid. I'd like to come every day and have my teeth cleaned, its so pleasant. I will tell all my friends to come here." If there should be any portions of tartar remaining they can be removed with a small scaler. With a syringe wash off the teeth with water at a temperature of about 100 degrees. If there should be any large cavities and you are certain there is not an exposed pulp, they can be washed out, but be very careful to direct the point of the syringe toward the outer wall of the cavity. After drying with absorbent cotton, with the dressing pliers apply a pledget of cotton dipped in beechwood creosote, oil of cloves, and oil of peppermint. Cover with another pledget dipped in red gutta percha dissolved in chloroform, the proper size to neatly fill the cavity. Patients will often say, "this tastes like candy." It seems a great stretch of the imagination to believe that creosote tastes like candy, but if they think so I do not object.

You may think it very absurd in me to explain every little movement you are to make with the timid patient. It is these little things that imperceptibly accustom them to the use of instruments in the mouth, and your patience and kindness have given them such confidence in you that they are willing to do anything you ask. Remember how much there is at stake. You may be making patients for life. One cross word, one slip of an instrument lacerating the gum may

send your trembling patient howling from the chair where it will be very difficult to persuade her to return. You must be so guarded in every movement that you will never allow such an accident to occur. You must impress upon the minds of patients the necessity of having the teeth examined frequently, especially if they are inclined to decay rapidly. Neglect will cause very serious consequences, but as they will regard a visit to your office as something to be desired, you will have very little difficulty in persuading them to follow your advice. As they grow older and can appreciate the value of a beautiful set of teeth they will be still more desirous of visiting you. When the sweet doves that present their lovely little bills for your inspection, and the lovely large bills you present to their parents for their inspection will be very small remuneration for the great benefit you have conferred upon them.

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ALUMINUM CROWN CORRESPONDENCE.

SALEM, Mass., July 13, 1898.

T. F. CHUPEIN, D. D. S., Editor.

Dear Sir :

In July DENTAL OFFICE AND LABORATORY I see reports of two aluminum crowns. I will add my experience.

I set an aluminum crown on lower first molar with cement, and at the same sitting filled distal surface of second bicuspid with alloy, filling, not touching, crown. In filling, several pieces of alloy clung to crown, but I carefully removed them. Four hours afterward patient came in and I found the crown turned to a frosted appearance, was hissing and quite hot. Sides of crown badly eaten and split. Removed crown with my fingers. Cement was intact, as was also the alloy filling.

I will forward you this crown by mail.

Sincerely,

ALFRED A. FROST, D. D. S.

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ELIZABETH CITY, N. C., July 16, 1898.

Editor DENTAL OFFICE AND LABORATORY.

Sir :

I was very much interested in Dr. Todd's experience with aluminum crowns, as published in July number of DENTAL OFFICE AND LABORATORY, as I have recently had some annoyance of the same kind.

Several years ago I crowned the left lower third molar with an

aluminum crown. The patient is a married lady, about 35 years old now. About a week ago she came in my office to have me attend to two small places that had worn through. The crown was set with cement. I simply made a small under cut and filled the two little places with amalgam, and dismissed the case; but was very much surprised the next morning to receive a message from the lady that the entire crown was off, and wanted an engagement to have it put on. She brought the crown carefully wrapped up, and handed it to me. Instead of the two small holes in it the whole crown was nearly gone. What was left had the appearance of having been in some preparation which had dissolved or eaten it away. It was not thicker than ordinary writing paper. Just a band of it was left, which had been eaten into.

The cement was still intact on the natural crown. I had never heard of one doing this way before I saw Dr. Todd's article.

Very truly yours,

J. H. WHITE.

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BIRMINGHAM, ALA., Aug. 2, 1898.

DENTAL OFFICE AND LABORATORY.

Gentlemen:

Have just seen Dr. Geo. L. Todd's (Philadelphia, Pa.), experience and the editor's remarks on aluminum crowns and amalgam in July issue of DENTAL OFFICE AND LABORATORY. Not long since I had a little experience with aluminum and amalgam. A Mr. F., about 38 years of age, of sanguo-bilious temperament, was wearing on second left lower bicuspid an aluminum crown with cusps filled with amalgam. Had given perfect comfort for about eighteen months. Early after arriving at his office, he noticed a peculiar taste and soon he felt some heat, and on investigating he found instead of his well-crowned tooth he had quite a chemical exhibition. He came to my office a few minutes later, and by this time the entire coronal portion was gone, leaving the amalgam on top. On the neck of the tooth was yet a portion of the crown, all frosted and sizzling, producing heat enough to be very uncomfortable for the surrounding tissue. With an excavator the remaining portion was removed and found to be entirely eaten up, and crumbled up between my fingers. The crown was set with phosphate which was in perfect condition, and it was only after wearing a small hole in the crown, and allowing the saliva to enter, that set it off. Immediate relief after removing the aluminum. Moral.—Never use amalgam with aluminum.

E. A. WILSON, D. D. S.

# THE Dental Office and Laboratory.

FOURTH SERIES.

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PHILADELPHIA, NOVEMBER, 1898.

No. 6

## THE CONSTRUCTION OF CROWN AND BRIDGE WORK.

By THEODORE F. CHUPPIN, D.D.S., Philadelphia, Pa.

[SIXTH PAPER.]

In our former papers on the subject of crowns, we made no allusion to the Bonwill crown, or the Davis crown, the Logan crown, or the Removable-pin crown, because as these crowns are manufactured for the dentist, the latter is only called on to treat the root, fit the crown and insert it, so that he has nothing to do with the construction.

We think we have pretty well gone over the ground for the construction of *crowns* of different styles in the papers which have preceded this, and have endeavored to illustrate the subject so thoroughly as to make it clear to any of our readers who will read with the desire to understand the subjects.

We next propose to take up the subject of *Bridge Work*. In this, as we did in crown work, we will first treat the simplest case, and advance by easy stages to the more difficult.

In Fig. 77 we illustrate a case for the supplying of a lateral incisor. The cuspid and central incisor are both vital teeth. The first procedure will be to grind a small pit on the palatal surfaces of each of these teeth. (See cut.) The pits need not be either *large* or *deep* at this stage. The making of these pits is best done with a *minute cavity corundum point*, or, if such be not at hand, with a small size *fine cut plug finishing bur* like Fig. 78. The pits need not be deeper than the thirty-second of an inch. The pits being formed,

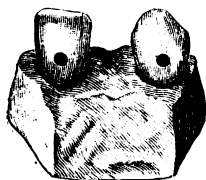


FIG. 77.

an impression is taken *with plaster of Paris*, which shall include the space and *at least* two teeth on each side of the space. To take the impression use *quick-setting plaster*. About a tablespoonful of water is put into a bowl, next a pinch of salt—not more than will lie on the end of the large blade of a pen-knife will be sufficient for this quantity of water

This is stirred in the water until it is thoroughly dissolved, then the plaster is sprinkled into the water from the end of the spatula. The plaster should be entirely *water soaked*, after which it should be stirred in the bowl until it is perfectly smooth, creamy and free from



FIG. 78. with a napkin, and then, with a camel hair pencil, thoroughly paint these parts

with some of Johnson's ethereal soap, so as to prevent the plaster from adhering to the necks of the teeth, as it is apt to do. After the gums and teeth are thus painted, the patient is directed to hold the lips away so they will not fall in contact with these parts, for if they do, the lips by their motion will rub off the ethereal soap. While the patient is thus employed the dentist can mix the plaster, as we have described, and convey it to the teeth and space, the impression of which he is desirous of securing.

The cup, with its batter of plaster, is carried to the parts in such a way as to exclude all air bubbles, and held steadily in place until it hardens thoroughly. If the plaster used for taking the impression be *quick-setting plaster*, or what is sold as *impression plaster* (which should always be used for taking impressions), it will set quite hard enough to admit of removal by the time the operator counts 500 *moderately slow*.

The impression is removed by moving the cup up and down, or from side to side *gently*, or a few drops of water may be squirted over the plaster, holding away the lips when doing this, so as to break up the adhesion. *It should come away perfect*, without any of the plaster adhering at the gum margins near the necks of the teeth, which it will do if the plaster is permitted to get *right hard*, but when the teeth are "fan-shaped" it is almost impossible to prevent a slight fracture of the plaster at these points. It is best, when conveying the batter of plaster in the cup to the teeth, that this be as *thin as possible*. It should not be so thick as to "curl" or "crack" when it is carried to position. Besides this, when conveyed to the parts *thin*, it takes a sharper impression, and there is less liability of fracture at the necks of the teeth, if permitted to get quite hard.

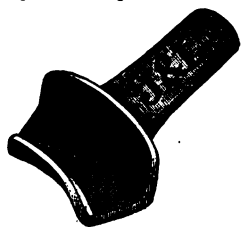


FIG. 79.

The impression being removed from the mouth, it is then *luted* at each end as shown by Fig. 80. The luting of the sides of the impression may be accomplished either with plaster of paris or with mouldine. Plaster accomplishes the object better, but is more tedious. To lute the sides of the impression with plaster, the impression is moistened

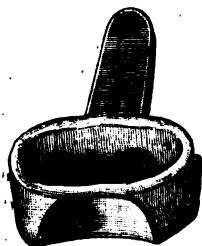


FIG. 80.

in water, and fresh plaster, *mixed creamy*, is conveyed with a knife blade to the sides of the impression, and added to the impression, little by little, until the sides are built up as is shown by Fig. 80. The same thing may be done with mouldine, but unless this be very carefully done, the metal which is poured into the impression is apt to leak out by some minute unperceived vent, and thereby spoil the impression. The object of luting the impression is to prevent the escape of the

fusible metal which forms the die which is to be the guide for the workman. The die formed by this process is represented by Fig. 77.

A die being secured by means of the manipulation we have described, *small pieces of pure gold* are burnished and most accurately fitted to the *palatal surfaces* of the *cuspid* and *central incisor*. The small pits which were formed on the surfaces of these teeth in the mouth, are accurately reproduced on the die, and the pure gold (about 32 gage) may be readily pressed into these pits. The object of forming these pits, first, is to know exactly where the retaining pin is to be inserted, and where the pure gold is to be pierced for their insertion. A porcelain tooth is now selected of proper shade and size. As to the size we will say that it should be *a little wide for the space*; that is, *it should not pass freely between the two adjoining teeth*, but should be *the merest bit wider* so as to very slightly lap the central and cuspid. The porcelain tooth should be backed, and the backing riveted to the tooth before any grinding is done. We prefer to back the tooth with platinum, because with this metal we can make the backing fit the tooth more accurately than with 18 or 20 karat gold; and as the backing is entirely covered with solder there is no advantage in using these stiffer metals for this purpose. Besides, by backing the tooth first, should the grinding encroach on the pins there will not be any liability of fracturing the tooth as there would be if the backing and riveting be done after.

The next thing will be to make the retaining pins. They are made from the pins in an old vulcanite tooth by breaking this and saving the pins.

It is well in forming these plates to use a piece of gold which will cover not only the palatal surfaces of these teeth, but which will lie slightly also on the mesial and distal surfaces of the central and cuspid. In forming the plates in this way, the retaining pins may be inserted into their respective holes and made to go accurately into position, as the part lying on these teeth will aid in sustaining the pieces of gold accurately. The retaining pins are now passed through the small holes of the plates and the protruding ends are soldered with the *minutest pieces of solder*. This is shown by Fig 83. The plates and retaining pins



are now tried in the mouth. The pits first formed are deepened so that the retaining pins may enter the cavities and permit the plates to lie in close contact with the palatal surfaces of the incisor and cuspid. Should the deepening of these cavities cause pain, this may be mitigated by the application of chloride of zinc, heated air, dehydration and the application of absolute alcohol, or by the spraying with chloride of ethel, cataphoreses, or any of the means used for the alleviation of pain, such as is employed in the preparation of a cavity of decay for filling. In deepening these cavities for the reception of the retaining pins, it is well to cut the cavities on a line with *the long axis* of the tooth, since the bridge will be slipped into place in this direction. Should they be cut in the direction from the palatal towards the labial surface, the palatal plate and the porcelain facing would not *bear equally* when the bridge is inserted. Another impression is taken with plaster with these plates in position. The object of taking this second impression is for the purpose of obtaining *greater certainty*. If the model be used which was made from the first impression, the different parts would have to be stuck together with adhesive wax, and then lifted off from the model in order to invest the bridge for soldering. To lift off the bridge is a very delicate operation, and despite the utmost care it will get bent or twisted. Besides this, in sticking the various parts together it is almost impossible to prevent some of the adhesive wax from sticking to the model as well as to the bridge. By taking an extra impression with the various parts in place—which is a simple thing—a model is made from it with *plaster and sand*, and the tooth is mounted on this model. When the workman is ready to invest, all he has to do is to stick the part together on this sand and plaster model. It will not matter whether the adhesive wax sticks to the model or not, as the model (being cut down to its smallest proportions) is invested as well

as the different parts of the bridge and the parts soldered. Done in this way there is the *certainty* of not disturbing the relations of the different parts of the bridge. Before investing this sand and plaster model with the bridge in place, the model should be soaked in water. The porcelain facing is secured to the little plates on the teeth with adhesive wax gradually heated and soldered. In soldering it is well to let the solder flow well *all over the pure gold plates* on the palatal parts of the teeth, as these, having been made of thin and pure gold, which is very soft, must be well stiffened with solder to give stability to the bridge.

When thoroughly cold it is removed from the investment and boiled in acid and water. The case is then polished, when it is ready for insertion. To insert bridges, generally, we find it best to let an assistant mix the cement while the operator wipes the teeth dry, on all surfaces as well as the gums, protecting the parts from all moisture by means of a napkin properly folded about the teeth; the bridge is put in place when all is ready. Should an assistant not be at hand, we sometimes apply *thin rubber dam* about the teeth, and in this way secure absolute dryness. The cement



FIG. 84.

should not be mixed thick or pasty, but should be like thick cream of the consistency of glycerine. A cement, mixed of this consistency, which will *set hard* in not more than five minutes, is the proper cement to use for bridge work. The finished bridge is shown by Fig. 84.

The next case is shown by Fig. 85. In this case the lateral incisor has been lost and the cuspid root remains. The root of the cuspid is prepared for a Richmond crown. The root end is left about the one thirty-second of an inch above the gum margin, and made level with the facers. Fig. 86.

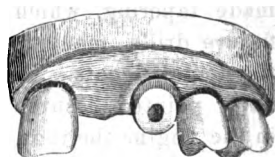


FIG. 85.

The enamel is stripped from root near its face, and prepared for the accurate fitting of the band which is to encircle it. This may also be accomplished by the aid of the various instruments put on the market for this purpose, or by Dr. Long's adjustable root trimmers. Fig. 87.

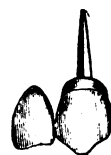


FIG 92.

A cap is then soldered to the band. This is accomplished by laying the band on a flat piece of gold plate. The manner of doing this is shown in Fig. 88. These cuts, while they do not exactly show the

band or ferule which has been fitted to the end of the root, will exemplify the manner in which it is soldered to the metal which forms the cap.

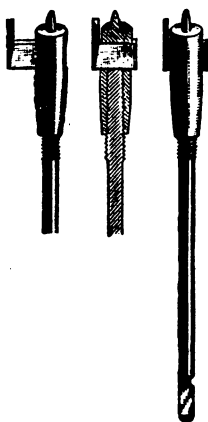


FIG. 87.

The soldering should be done with the smallest particle of solder. In soldering the band to the cap, paint the cap with creamy borax and water, then heat this red hot. This will cause the borax to melt evenly all over the cap, then lay the band on the cap and the piece of solder being placed next the band on the cap will flow evenly when heated, *providing the fitting is perfect.*



FIG. 86.

If the band be laid on the cap before the borax is melted in this way, it will be moved from its position by the swelling up of the borax when the heat is applied. The cap being soldered to the band, it is boiled in acid to remove the melted borax, when the excess of the cap is cut away even with the edges of the band. The cap is then placed on the root to see that it fits perfectly. It is then removed, and the root canal is prepared for the reception of the dowel. The root canal is generally made tapering, which may be accomplished by means of tapering fissure drills, many forms and sizes of which may be procured at the dental depots. Should these not be at hand, however, the ordinary pointed fissure drill may be used. When these are used in the engine the root canal may be gradually increased to the size desired by using, successively, the sizes from smaller to larger. These fissure drills serve another purpose. The depth of the cut edges of the drill, down to the point where the shank of the tool begins, will indicate the depth which has been reamed out, will generally be a guide as to how long the dowel should be. In cuspid roots, where the dowel should be a little longer, the taper may be continued, by the use of successive cone burs.



FIG. 88.

The canal being prepared, the cap is set on the root end. A ball burnisher is pressed on the cap in the vicinity of the hole in the root. This causes the cap to be depressed at this point, and will indicate where the cap is to be pierced for the reception of the dowel. It will sometimes happen that by sizing the protruding end of the dowel

the cap will be brought away with it without disturbing the relations of the two parts, when it may be soldered without the trouble of investing; but when this does not occur, the dowel must be united to the cap with adhesive wax, when they are removed carefully, invested and soldered.

After soldering, the bite is taken with *smallest piece of wax*. We insist on the smallest piece of wax for taking the bite in these cases, as with a small piece more certain results are attained. If a large piece be used it shuts off the view, and should teeth not occlude naturally it will not be known. A large piece of wax obstructs the sight; when a smaller piece is used the operator can see clearly when the teeth are brought in exact opposition.

The bite is then removed. A small impression is taken of the oppos-

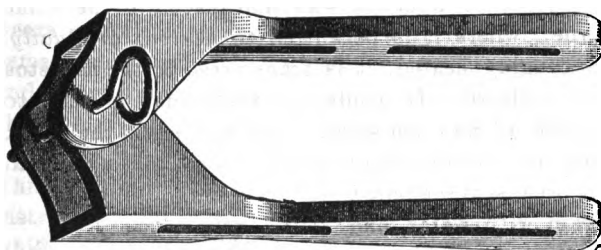


FIG. 91.

ing teeth with wax, and an impression of the capped root is taken, *with plaster*, of the parts to be replaced.

A model is run into this impres-

sion *with plaster and sand*. The model being removed from the impression, the bite is placed on this and the model of the opposing teeth (which was taken with wax) is placed in the imprint of the bite, and an articulating model is run on the plaster and sand model; or preferably, by placing the models in a crown articulator. (Fig. 91).

The protruding end of the dowel is now cut close down to the cap. A cuspid tooth, of proper shade, size and character, is then backed and ground to fit the cap accurately, when it is united to these parts with adhesive wax. The lateral incisor dummy is likewise backed and ground to fit in its place; the bite indicating how these teeth (the lateral dummy and cuspid crown) are to be placed. Adhesive wax is now used to unite the dummy to the crown. It will not matter if the adhesive wax flows over the model as well as over the bridge, because as this model was made of plaster and sand it will not have to be removed from the model for investment, but may be soldered in this by first cutting it away from the articulator, then trimming the model down to its smallest proportions, soaking this in water while more investment of plaster and sand are mixed, when the model, with its adherent bridge, is invested into it.

The case having been invested, it is trimmed preparatory to being heated up, previous to soldering. In trimming the investment, be sure that there will be a *free access* of the blaze of the blowpipe so that this will readily reach the parts over which it is designed to melt or flow the solder. To make this clearer, the investment should be

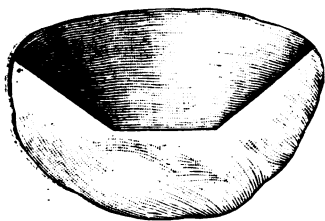


FIG. 91A.

trimmed as shown by Fig. 91A (not like Fig. 91B), for in the latter case the blaze would have difficulty in reaching the work unless the blaze were "pointed," which does not permit the solder to flow as smoothly as a full blast.

The bridge is then cleaned of all the adhesive wax, and placed in the flame of the Bunsen burner, where it is permitted to *heat up gradually*. When well and thoroughly heated, it is transferred to the asbestos soldering block, and soldered. In soldering the solder is cut into small pieces an eighth of an inch square, and applied to the work. Borax is applied, but it is well to apply *dry powdered borax* in small quantities at a time, because if the borax be mixed to a cream with water, and thus applied to the work, the sudden application of this to the heated work is very apt to crack or check the porcelain facings, so that this is an important consideration. When the work is thoroughly heated, as we have indicated, the water of crystallization passes from the borax immediately, and leaves this evenly melted over the parts, and serves as an admirable flux for the solder which spreads, like water, over all the parts.

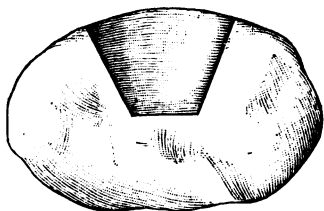


FIG. 91B.

When the work is thoroughly cold the investment is cut away, and all adherent plaster and sand removed, when it is boiled in pickle to dissolve the melted borax which adheres to the work.

The bridge is then ground into proper shape with small corundum points and wheels, after which all scratches are removed with the proper wheels for this purpose, and polished in the polishing lathe.

In making a bridge, such as we have just described (which is shown by Fig. 92, see page 165), it is well that the dowel be made of *square wire*; for, should it be made of round wire, the lower teeth striking close to or against the dummy is apt to throw this *outwardly*, because

the round dowel does not offer sufficient resistance to this pressure, while the square dowel offers more resistance.

Should this not be done, it will be necessary to place a small plate on the palatal surface of the central incisor in order to resist this tendency to move outwardly, as shown in Fig. 84.

The bridge is inserted in the manner we have already described.

[TO BE CONTINUED.]

## THE IMPORTANCE OF ESTABLISHING A TECHNIC AS WELL AS LITERARY STANDARD FOR COLLEGE ENTRANCE.

By S. H. GUILFORD, D.D.S., PH.D., Philadelphia, Pa.

Read before the National Association of Dental Faculties, August 29, 1898.

The good results accomplished by this association in its sixteen years of existence are not only universally conceded, but will ever remain as proof of the wisdom of its organization and its general endeavors to elevate the standard of practice. It was realized that this could only be done by sending into the profession men better equipped for practice than the majority of those then entering it. This required certain changes in the prevailing methods of college instruction, some of which have gradually been brought about while others are in course of development. The association first addressed itself to lengthening the course of study. The recognition of five years' practice as an equivalent of one year's course in college was done away with and an invariable two years' course demanded.

Then came the lengthening of the winter term from four to five and subsequently to six months, after which another year was added to the college curriculum.

With all these advancements, however, beneficial as they were in their results, it was found that a proportion of the yearly graduates were not up to the standard demanded either by the public or the profession, and another change became necessary to remedy the condition. At the time of the organization of this association, and for many years afterward, there were very few dental colleges that inquired into the earlier educational training of those who applied for admission. It seemed to have been taken for granted that anyone applying for admission must have had sufficient mental training to enable him to grasp and pursue the various studies of the curriculum. This proved to be erroneous, for it was found that while a student might, by close application, manage to pass his examination in the theoretical branches, he did not have that general grasp of these subjects which was necessary to make him a well-rounded man.

Following this discovery came the adoption of entrance requirements, which necessitated a certain amount of mental training in the schools before the candidate could be allowed to begin his collegiate studies. These requirements were very moderate at first, but were gradually increased until they equaled the completion of a full grammar course.

This far the plan had worked admirably, principally because it was gradual. Two years ago, however, a further advance was decided upon by which in the course of a few years the entrance requirements were to equal completion of a high school course. This change was so radical in character that it worked a hardship upon many students who were not able to meet it, and who in consequence were debarred from college entrance.

As a result of this, one year ago the latest advance was annulled and the requirements reduced to their previous standard. This retreat from an advanced position was regretted by many schools, and the question of some advancement from our present standard will doubtless come before the association at its present meeting.

In anticipation of this your essayist decided to prepare this paper for the purpose of presenting certain views upon the subject and offering them for your consideration.

As previously mentioned, the raising of the entrance requirements to equal a completed grammar school course has proven itself a wise act, and none have cause to regret it. With less preparatory training it was found that the student's mental faculties had not been properly awakened nor correct habits of study formed, and that he was in consequence placed at a disadvantage in trying to acquire a knowledge of at least some of the more abstruse subjects which he was expected to master.

In view of the fact that the advancement to the present standard has worked well, the question naturally arises as to whether a further advancement would not be advisable, and, if so, what form it should take. Strange to say, we have thus far been viewing and treating the subject of preliminary requirements from a single standpoint. All of our discussions as well as our enactments have dealt solely with the mental acquirements and possibilities of the proposed student, entirely overlooking or ignoring the equal or more important feature of manual dexterity or mechanical bent.

All of us are fully aware of the absolute importance of mechanical talent in the practice of our profession, and we are equally cognizant of the fact that unless this talent is innate it will always be

lacking, for it cannot be acquired. No amount of training and instruction can develop a skillful mechanic out of one who lacks the mechanical instinct. If this be so is it not important that we, as teachers, see that those who place themselves under our care for preparation for their life-work are possessed of this necessary qualification? In former times, before the wave of progress had swept across the beaten path of dental education, when the student received his preliminary, and at times the greater part of his dental training in a preceptor's office, or rather laboratory, it was an almost universal custom for the practitioner, before accepting a student, to ascertain whether he possessed a natural bent in the line of mechanics.

This was done by inquiring into the young man's turn of mind, his fondness for tools and their employment in constructing some of the simple mechanisms so necessary to the complete happiness of boyhood. In addition to this it was customary to accept the student for a certain period upon probation, to still further ascertain his adaptability to his proposed life work.

While in these later times we recognize the shortcoming of our predecessors in not demanding at least some educational requirements from their students, may we not at the same time take a hint from their methods, and incorporate some of their requirements into our own? In other words, has the time not fully arrived when we should demand mechanical talent as well as scholastic acquirements as preliminaries to entrance upon the study of dentistry?

It would seem that in this matter as in many others we have been rather blindly following in the footsteps of our sister profession, medicine, not fully appreciating the differences that exist between them. Dentistry occupies rather a unique position among the sciences and professions, in that to be of the greatest service to mankind the practitioner must necessarily be possessed of considerable manual dexterity.

This is not required of the lawyer, the theologian, or the physician in ordinary practice, for their success depends mainly if not entirely upon the development and use of their mental faculties. For one undertaking the study of any of these professions it is therefore quite proper that the only qualification demanded should be a scholastic one.

Should the student of medicine prove to be possessed of mechanical talent, he will, after graduation, naturally drift into the special practice of surgery, which will be more to his taste, and afford him a better field for the employment of manipulative skill. Should his

taste not run in the mechanical line, he still has in the domain of general practice and some of the specialties a large field for successful effort.

With us it is different. To properly serve the needs of his patients the dentist must be skillful with tools, for so large a part of his daily work is manipulative in character. If he lacks this skill he must prove a failure, for in the practice of dentistry there is no place for the employment of the mental faculties alone as there is in medicine.

The vocation of the instrumental musician bears some little resemblance to our own in that it requires for its successful pursuit not only the development of the mental and esthetic qualities, but an absolute dependence upon manipulative ability. Without the latter the former quality would be of no avail. A teacher of instrumental music would probably prefer to have as his student one with a liberal education, for he would add luster to his chosen calling; but he would certainly not accept or retain as a pupil, no matter what his literary attainments may be, one who was lacking in technical ability or possibility.

Why, therefore, should we do less?

The dentistry of to-day owes much of its progress and high standing to the class of men who entered it from thirty to sixty years ago under the private studentship system. Almost without an exception they were men possessed of a high order of mechanical and inventive ability, and they were so because they were selected from the mass by their preceptors.

It therefore seems to me that it would only be the part of wisdom for us to so amend our requirements as to include manipulative ability, and where this is lacking to reject the student and advise him to take up some other calling. It certainly does not seem just to accept a student who is by nature lacking in that quality which is absolutely essential to his success in practice.

With our greatly improved methods of systematic technic instruction we have certainly accomplished good results with the material given us, but how much better might have been the results with the material properly culled. Many students, as we all know, manage to work along through college, performing their allotted tasks and passing the required examinations, who we are morally certain will not be successful in practice because all that they accomplished was performed in a labored way, without any display of actual skill.

Are we just to them and to the public in permitting this? Should we not discover the lacking quality before accepting them, or find

some way of discovering it in the early part of their course and kindly advise them to change their vocation?

If by some extra effort on our part we were able to develop skill where natural ability is lacking the conditions would be different, and we would be relieved from the necessity of considering the question; but unfortunately we cannot grow the plant where seed or soil is lacking.

The question now arises, What shall the mechanical standard be, and how may it best be incorporated with the other requirements? This is not for me to answer. It is a problem, and its solution will require the united wisdom of the members of this association.

By way of suggestion, however, I would offer the following:

1. The student should be assigned a desk or bench in the laboratory, furnished with the necessary tools and material, and be given an appliance or device which he is to reproduce as accurately as possible.

2. The task assigned should be such as to preclude the probability of his having done work of exactly similar character before, so as to guard against mere automatic repetition.

3. The ordinary laboratory processes, involving no special skill, such as repairs or additions to vulcanite plates, should be excluded.

4. In cases where the candidate has had no experience in the use of some of our special tools or processes, such as soldering, swaging, etc., the test should be simple in character, and might consist in requiring him to reproduce from a block of wood, by means of saw, file, and penknife, some geometrical form, as a cube, pyramid, or rhomb.

5. In cases where the applicant has had some laboratory instruction or practice before coming to college, the test should be a little more severe in character. Inasmuch as regulating appliances are so varied in character, and often combine a number of different manipulations in their construction, such as filing, bending, soldering, etc., the construction of one of unusual design would probably furnish the best all around test of ability.

6. During the test the student should be isolated until the task is completed. A competent demonstrator should watch the progress of the work from time to time, so as to form an opinion of the candidate's handiness with tools, but should offer no aid, even in the way of suggestion.

## CONTOUR AMALGAM FILLINGS; MATRICES, HOW TO MAKE AND APPLY THEM.

By THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

In the insertion of large amalgam fillings where the contour has to be restored our first effort is to obtain a perfect approach to the neck of the tooth. This we accomplish by passing a string twice around the tooth and tying this tightly; forcing the ligature well on the neck of the tooth before tying; and should it show a disposition to drop away, keeping it in place by smearing a little phosphate cement on the tooth at two or three points next the string.

On the return of the patient, the dam is applied and a thorough preparation of the cavity made, making sure that the borders of the cavity are strong. If in doing this the cavity should be left "saucer-shaped," and the making of undercuts would either weaken the tooth, or cause too much pain, we may resort to two expedients: The one is to smear over the floor of the cavity a small quantity of phosphate



FIG. 1.

cement to hold the first piece of amalgam in the cavity, or to cut the cavity, on its masticating surface, in the form of a "dove tail" connecting this with the proximate cavity, or both, as is shown by Fig. 1.

The next thing, after the cavity is prepared, is the forming and applying of the matrix. There are many devices on the market for retaining the matrix in position; but after the trial of many, we have abandoned all for those which the dentist may make for himself. If a quick-setting alloy be used, a retainer may be used, if the dentist prefer the employment of one of these; but if a slow-setting alloy be preferred, it will be necessary to leave the matrix encircling the



FIG. 2.

tooth until the alloy hardens, for fear of destroying the filling in the attempt to remove the matrix, or least the occlusion of the teeth

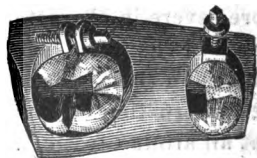


FIG. 3.

forces the alloy out of the cavity before this has thoroughly hardened.

A simple band matrix, such as is shown by Fig. 2 and Fig. 3, will not produce a contour, for the reason that it binds at the most prominent part of the tooth, leaving the neck of the tooth unapproached by the band. This is clearly shown by Fig. 4, which illustrates the

employment of such a matrix. The band for a matrix should be cut somewhat circular, as shown by Fig. 5, not wider than the figure,

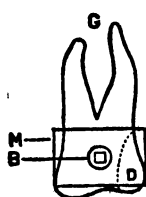
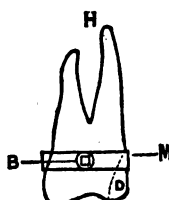


FIG. 4.



often a little narrower. In this form the *shorter curve* embraces the neck of the tooth, while the *larger* stands away and produces the contour like a funnel. Should there be a dip of the decay at the neck of the tooth extending beneath the gum margin, a compensating form should

be given to the band, as shown by Fig. 6.

The band is now passed around the tooth, and the ends brought up close against the buccal face by the means of a pair of flat-nose pliers, in the same way as one would proceed if



FIG. 5.

he were making a band for regulating purposes, illustrated by Fig. 7. The band is now lifted off the tooth carefully, and heated *red hot before the pliers are released*. By doing this, the ends will not spring away from each other, as shown by Fig. 8A, but will lay in close contact as



FIG. 6.

shown by 8B. There will not be any impediment in lifting off the band, because as the wide, or large part of the tooth is de

cayed away, this part will no doubt be quite as small as it is at the neck, hence the band should come off easily. The band is now laid on the soldering block, the ends smeared with borax and water, and a minute piece of silver solder laid at the junction. The solder is melted and the matrix is finished. The matrix is then applied. If it be found to be a little loose, a small wedge of orange wood may be passed between the matrix and the root. This will draw it up as shown by Fig. 9.



FIG. 7.

Another plan of applying a matrix, not as reliable, but more expeditious, is as follows: We have a pair of pliers which we filed up ourselves. A pair of long flat-nose pliers, like Fig. 11, were procured and the temper taken out by heating red hot. These we filed into extreme attenuation, as shown by Fig. 10, when they were re-tempered. After the band is applied to the tooth, and drawn up close, like Fig. 7, the ends are seized with ends of the pliers, Fig. 10, and twisted or turned over and over like the joints of a stovepipe,

until they lie in close contact to the tooth. A wedge may be applied to this matrix in the same way as the soldered matrix, illustrated by Fig. 9.

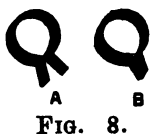


FIG. 8.

We are now ready for filling. Should the proximate cavity be too "saucer-shaped" to hold the filling alone, a small quantity of phosphate cement is smeared over this part, and the amalgam added to it and pressed all over in every place, and then afterwards brought over the masticating surface into the "dovetail."



FIG. 9.

It is important that all *margins and borders* be made strong, for, if reliance be placed on enamel alone, this will chip away or fracture, and the integrity of the filling destroyed. In finishing such fillings it is

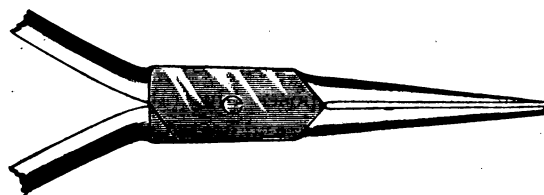


FIG. 10.

well to dress away until the opposing teeth strike clear of the filling.

When a filling of amalgam is inserted with the aid of such a matrix, the con-

tour may be perfectly restored. The matrix is left on the tooth until the alloy hardens. It is then cut off by inserting any thin sharp instrument between it and the tooth and pried off. As the matrix is made of very thin German silver, nickel, or copper, this will not be difficult.

The filling is then ground and polished. This may be readily accomplished by applying the dam and using fine sand-paper

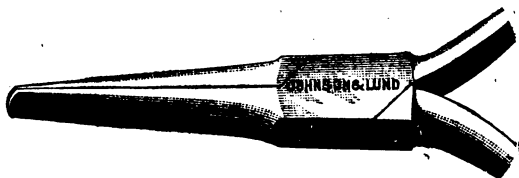


FIG. 11.

disks, cavity burs, and fine small corundum points in the dental engine. Should there be any amalgam at the cervical margin, which may have been forced between the matrix and the tooth (but this will never occur if the matrix be properly applied and fitted), this may be readily removed by means of a small fissure bur in the dental engine, working at the neck of the tooth in the interdental space from the buccal surface. This is better accomplished after the dam has been removed, as with it in place the fissure bur is apt to catch and tear the dam. After this part is made perfectly flush and smooth, the

parts are polished by means of a stick in the screw-clamp port polisher of the dental engine, the wood being screwed into the port polisher, and the protruding end being brought to a fine point, and charged with powdered pumice and water.

### MUSCLES OF EXPRESSION.

By W. J. BLAIR, Student, Jonesboro, Miss.

The beauty of the human countenance is more complicated than that belonging to most natural objects. The chief beauty of the countenance, however, lies in what is called its expression. The muscles of the face are the instruments of the mind in the expression of thought, feeling, and emotions, so it is important to understand the anatomy and functions of these muscles in the art of constructing artificial dentures. How easy the expression of the countenance can be affected by mal-positions of the teeth or by unskillfully constructed artificial dentures. I will consider the functions of a few of these expressive muscles in connection with artificial dentures. I will consider the functions of a few of these expressive muscles in connection with artificial dentures. The orbicularis oris is regarded by anatomists as a sphincter muscle and all the muscles of facial expression communicate with this complicated one. The muscles that are connected with the orbicularis oris should remain at ease, as undue prominence at one point will change every expression of the face and not a muscle will perform with ease and grace its appropriate function.

The levator labii superius alæque nasi is inserted into the wing of the nose and the orbicularis oris. The action of this muscle is to lift the wing of the nose and raise the lip, producing an expression of aversion.

Artificial dentures that are too prominent, causing undue strain upon this muscle, will change the office of the orbicularis oris producing a foolish expression. We will now consider the buccinator as an expressive muscle acting secondarily. This muscle takes its name from the word *buccina*, a trumpet, the trumpeter's muscle; a muscle of the cheek so called from its being much used in blowing the trumpet. This muscle is inserted into the orbicularis oris and its use is to draw the mouth upwards and outwards towards the ear.

The office of this muscle can be changed with artificial dentures that unduly distend the buccinator causing an abnormal action of the levator anguli oris, producing also an unnatural expression.

To cause a painful expression of the countenance we will consider

the risorins a muscle which arises before the parotid gland and proceeds towards the angle of the mouth. This is the laughing muscle of Santorini. The mal-position of the first molar will cause this to entirely change its usual function. The first molar must be in its proper position, as either within or without will produce the same expression. The depressor labii inferioris and the levator labii inferioris are inserted into the lower lip and chin; one depresses the upper lip against the teeth, the other raises the lower lip, and the fulness of lower artificial dentures near the center of the lip will strain these muscles, causing a haughty expression. A weeping expression can be produced by the extreme fullness of a plate at the canine fossa of the upper jaw. The levator anguli oris will be strained, and the corner of the mouth will be raised. The buccinator will draw the mouth, changing the position of the risorins and producing a half-weeping expression. At death, when the muscles are entirely relaxed, the expression is not natural; but as soon as the muscles contract to their natural state during life, they give to the countenance its natural expression.

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[THIRTY-FIFTH PAPER.]

LEADING QUESTIONS AND ANSWERS FOR DENTAL STUDENTS.

By THEODORE F. CHUPEIN, D. D. S., Philadelphia, Pa.

PUTRESCENT PULP.

Q. After the very lucid exhibition of these cases by Prof. Litch in our last paper, how is it proposed to treat them?

A. The canals are thoroughly cleansed by syringing them out with warm water. The rubber dam is applied and the canals made perfectly dry. Meditrina, iodoform, or an alcoholic solution of hydro-naphthol, or peroxide of soda, may be used to destroy the mephitic gases. These are applied on minute shreds of cotton and carried to the root end and then sealed in with gutta percha, leaving a vent through this filling for the escape of gas should these agents not entirely prevent their formation. The treatment is repeated until a cure is effected.

Q. What agents are regarded as the best for the treatment of putrescent pulp, destroying mephitic gases, destroying Bacteria, etc.?

A. The bichlo-mercury is regarded as "the prince of germicides," while favorable results have been obtained with peroxide of hydrogen, peroxide of soda, the ethereal solution of pyrozone, Meditrina, the sulphate of quinine, etc., etc.

Q. How is it determined when such root canals may be filled?

A. When there is an absence of all odor, or when the cotton, which had been placed in the canal, is removed clean, white, and free from all stain.

Q. Is it the exudation from the remains of the pulp which impart the odor and stain to the cotton?

A. Not solely. The dentine surrounding the pulp is permeated with innumerable minute canals into which the odor is held, and the putrescent matter infiltrates and until the deodorizers, antiseptics and germicides used to cure the condition entirely neutralize these conditions, the cure cannot be radically effected.

Q. Is the cure of these cases effected rapidly?

A. Not always. Some cases yield readily, while others are difficult to control. It is best to renew the treatment, even in favorable cases, often, so as to be sure that no septic condition remains which may cause after trouble.

Q. After the cure is effected what is next to be done?

A. The root is filled.

Q. How is this done?

A. Many materials have been proposed for filling the roots of such teeth. Cotton, at one time, was the almost universal practice. Then silk, wood, gold, tin, lead, copper, wax, gutta-percha, oxychloride of zinc, oxyphosphate of zinc, etc., etc., each having had, and still have, their advocates.

Q. Should root fillings partake of the same nature as crown fillings—that is, should they be as dense?

A. Of this there is diversity of opinion; some contending that the root filling should be solid and well impacted, while others contend that the root filling should be easy of removal, in the event of after trouble.

Q. How do the advocates of the latter mode reconcile their reasoning?

A. They contend that experience shows that a tooth treated for putrescent pulp may remain perfectly comfortable for many years—some of these having a record of twenty years—when with no accountable provocation, pain, soreness, and swelling will be brought about, necessitating the removal of both root and crown filling, and a retreatment of the case. Hence should the root have been densely filled it would be almost impossible—to say nothing of the pain inflicted—to remove a solid root filling.

Q. What do the advocates of solid root fillings advance of their system?

A. That if the root be thoroughly treated, all septic matter removed, and all mephitic odor neutralized, a return to the diseased condition is impossible; that such roots ought not to be filled until all diseased influences are removed, when the roots as well as the crowns may be solidly filled.

Q. How are the roots filled?

A. A free direct access must be had to the roots; these are reamed out with suitable root reamers until it is judged by the depth that the reamer enters, that it approaches nearly to the root apex—when the filling is inserted.

Q. Which is the most important root to fill in the upper molars?

A. The palatal root.

Q. Why not the two buccal roots?

A. Ordinarily the canals of these roots are so small that it is impossible to locate them, and even when found they are so minute as to rarely give trouble even if left unfilled.

Q. How are they best located?

A. Dr. Callahan has advised the flooding of the nerve chamber with a fifty per cent. solution of sulphuric acid and water, neutralizing this with a saturated solution of bicarbonate of soda and water, when the sulphuric acid solution acting on the lime salts of the tooth will so clear the nerve chamber of all foreign matter as to leave all the openings discernible. These applications are only made when the tooth is isolated by the rubber dam. Should the buccal root canals be found of sufficient size for entrance, these are also reamed out and filled as the other roots are, otherwise dependence is placed on the action of antiseptics drawn into these by capillary attraction to neutralize any septic sequence.

Q. What is advanced by those who favor solid root fillings?

A. They contend that if such root fillings combine the qualities of density as well as antiseptic influence, they should be used in preference to others, hence the oxychloride of zinc finds favor with many as a root filling.

Q. How is this introduced?

A. A thin batter of this cement is mixed, when a few shreds of cotton are incorporated with it. This is carried to the root end and then solidly packed. After a few minutes the cement hardens when the remainder of the root (or roots) is filled, and afterwards the crown.

Q. Suppose after the most protracted treatment and test filling, after test filling inserted, the diseased tooth continues to give annoyance, pain or discomfort, what is to be done?

A. When all means fail after the most thorough treatment, the tooth may be extracted should it be a useless back tooth, with no antagonist. But if it be an oral tooth it may be rendered comfortable, and be still retained by the plan suggested by Dr. Hullihen, of Wheeling, W. Va. He proposed to drill a small vent hole beneath the free margin of the gum to permit the escape of gas, the product of decomposition.

Q. How could the gas escape if the root were filled?

A. In performing this operation Dr. Hullihen did not propose to fill the roots at all; but to leave them free so as to permit the escape of gas from the roots through the vent.

Q. How is this best done?

A. A small drill, the size of a pin, is used to drill the vent. The drill is inserted from the buccal surface, about one thirty-second of an inch above the gum line, *beneath its free margin*. The drilling is continued until it touches and sinks suddenly into the nerve chamber. A small pin is now placed into this hole, and so cut that its length will correspond to the length of the hole drilled, and permit the head of the pin to lie in close contact to the tooth at the point of entrance. The other end of the pin, which may be distinctly seen protruding into the nerve chamber, may be covered with a small pellet of pink gutta percha. The rubber dam may be now applied and the tooth filled with gold, amalgam, tin, cement, gutta percha, or any material which the operator sees fit to use.

Q. Why should you drill this vent hole beneath the free margin of the gum?

A. The object of selecting this locality is that the gum will heal over and close the vent lightly, and thus secure the double purpose of preventing the ingress of food that would stop it up, and permitting the escape of gas.

Q. Do you remove the pin from the vent hole?

A. Yes. After the tooth is filled and the dam removed, the pin, which was put there merely to prevent the filling material from obstructing the vent, is removed.

Q. Is this not a rather filthy operation?

A. It is not one which is recommended, and is only employed as "a *derniere resort*." While it may be presumed that there is a constant escape of mephitic gas exuding from this vent, the flow is so

minute as not to be painfully apparent or perceptible. However, it is considered far preferable to have a tooth in this condition than to submit to its loss of usefulness or disfigurement by extraction.

Q. Is the operation one of permanency?

A. Some regard it only as a temporary expedient; yet cases are known where teeth thus treated have remained comfortable, and been useful for years, and where even the vent hole, after a time, could be filled, without giving further trouble, Nature seeming to come to the aid of Art in effecting the cure.

Q. Do we always find the pulp of teeth in this diseased or putrescent state?

A. No—sometimes the nerve chamber and root canals are found dry and apparently empty—the pulp having shrivelled up, and become, as it were, mummified.

Q. When the pulp takes on this condition does it not give pain as when the gangrene is moist?

A. We are not aware that it ever causes pain or gives trouble when in this condition.

Q. Does the tooth discolor or lose its translucency when the pulp thus dries up?

A. The change in color is so slight that it is never noticed.

Q. Does any odor emanate from the root canal when the tooth has thus lost its vitality?

A. No odor can be detected, and such teeth never need treatment.

Q. What is done for them?

A. The nerve chamber and root canals are simply cleansed and filled, as also the decayed place in the crown.

Q. Does this condition supervene in all teeth?

A. No. It has been noticed to occur only in hard dense teeth, mature teeth, or in the teeth of those well advanced in life.

Q. What is supposed to cause this mummification or shrivelling up of the pulp?

A. The supposition is that the liquor which filled the dentinal tubuli is changed into secondary dentine, and the pulp being thus deprived of a free circulation of fluids, dries up from the lack of moisture.

Q. Is the pulp liable to give pain although not exposed.

A. Yes. Nodular formations of secondary dentine may cause violent pain.

Q. What is the cause of these formations?

A. The cause is not entirely understood; but it has been noticed.

that the bountiful supply of the bone-forming material in food, coupled with a good organism and a plenty of fresh air and exercise will sometimes lead to the formation of these nodules in the pulp cavity.

Q. How are these formations diagnosed?

A. The symptoms reported are not always reliable, so that these cases are difficult of diagnosis. The pain from them has been of a boring character, and more severe at night, and while in a recumbent posture, than in the day, when in a perpendicular one. These cases have also been diagnosed by the successive application of very hot and iced water to the tooth, the patient evincing excruciating pain when one or the other of these agents would be applied to a tooth thus affected. The pain from teeth thus affected is not continuous, but comes on in paroxysms.

Q. What treatment is proposed in such cases?

A. The devitalization of the pulp and the subsequent filling of roots and crown.

Q. Does the pulp take on any other disease?

A. Yes; we notice what has been termed a fungus growth, or polypus of the pulp.

Q. In what cases is this disease noticed?

A. Generally in teeth excessively decayed, where the whole of the dentine is eaten away and nothing remains but the weak shell of enamel.

Q. What is its appearance?

A. It looks like a pellicle of gum tissue growing within the cavity.

Q. How is it determined that it is not gum tissue?

A. The rubber dam may be applied to the tooth and a ligature passed around the tooth, leaving the polypus within the cavity of decay adhering to the pulp. It likewise bleeds profusely at the slightest touch.

Q. What is the cause of these growths?

A. The constant irritation of the pulp which sometimes, as in these cases, causes a hypertrophied condition.

Q. Does pus as well as blood exude from these growths?

A. Very little pus has been noticed exuding from these formations.

Q. How are they attached?

A. They are attached to the pulp by a constricted neck, and may be moved from side to side without communicating much pain to its connection—the nerve.

Q. How is the absence of pain accounted for when it is touched?

A. As the sarcoma is on the outside, it protects the pulp to which it is attached.

Q. Are these polipi of the same color as gum tissue?

A. Very nearly, yet more of a dark red color, and their character is more fleshy than gum tissue.

Q. How is it proposed to treat such cases?

A. The polypus is snipped off as near as possible to where it joins the pulp with fine curved blade scissors, or with a lancet, and the blood arrested with styptics. The growth is well soaked with carbolic acid—nitric acid may succeed this or the strong cautery of nitrate of silver used. The remains of the pulp may be capped and the remainder of the cavity filled. As such cases will not last long a filling of gutta percha will probably be as good as any material to fill with. It has been advised in cases where the tooth is one of great value and presents a foundation for a harder filling to proceed with it as in other nerve cases—that is, removing the remains of the pulp, and filling the root, or roots and crown.

[TO BE CONTINUED.]

## REPORT OF THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

BY THEODORE F. CHUPEIN, D.D.S., Philadelphia, Pa.

*Dr. Wessels* spoke of the advantages of mixing emery with pumice for the purpose of removing the scratches left by the sandpaper preparatory to polishing rubber plates. By mixing this in the proportion of one-half, a surface may soon be obtained. This surface is still farther made smooth with pumice alone, when the plate is finally polished with whiting.

*Dr. Herbst* corroborated *Dr. Wessels*, as he had used it. He did not use it in so large a proportion, mixing only one-fourth of emery to three-fourths of pumice. He did not know the grade of the emery but thought 40 grade was coarse enough.

*Dr. Charles Chupein* had used this combination but thought 40 grade would be too coarse. He had found emery of 100 grade quite effective for the purpose and quite coarse enough.

*Dr. W. H. Trueman* would like to call to the attention of the members a metal which had lately been put on the market under the name of "Platanoid." The new metal oxidized readily, and darken-

ed the teeth on which it was used as a backing. It was readily dissolved by nitric acid.

*Dr. Chupein* had used the alloy, but had not noticed that it darkened the teeth on which it was used as a backing, nor that it oxidized readily. Its stiffness suggested to him its adaptability for use as pivots or dowels for crowns.

*Dr. Keyser* said that the best material he had used for dowels, posts, or pivots, was nickel. He obtained this by sawing a strip from a "five-cent piece." This could afterwards be filed round, square or tapering as suited the case in hand. He found it, for stiffness, equal to indo-platinum wire for the same purpose.

*Dr. Wessels* stated that he had used nickel, cut from a "five-cent piece" very satisfactorily for making "nuts" for regulating appliances.

In the item of cleansing and purifying wax, *Dr. Trueman* stated that after boiling this and removing all foreign matter, as suggested by *Dr. Chupein*, if a small quantity of sulphuric acid be added to it, the wax not only rendered clean and pure, but made much tougher.

*Dr. Trueman* stated that he thought all alloys were improved by annealing. He secured this by placing the bottle containing the filings or shavings within the hot air chamber of the house heating furnace, where the temperature was about 130° and keeping it there several days; after this treatment it seemed to him that the alloy mixed smoother. He favored "shavings" more than "filings" as he thought a better amalgamation was secured.

*Dr. Keyser* used asbestos wool moistened with water, as an investing material in soldering extensions to plate teeth. The advantage gained was that the workman had not to wait, as he would have to do, if invested with plaster of Paris and sand; but could proceed to solder at once.

*Dr. Trueman* stated that when zinc flowed sluggishly from the ladle, the condition could be entirely overcome by using an infinitesimal part of aluminum in the ladle. For this purpose an alloy was first made by adding one part of aluminum to twenty five parts of zinc. Of this alloy a very small amount is added to the zinc, say one part of the alloy to one hundred parts of zinc, in small quantities at a time.

*Dr. Wessels* was favorably impressed with the action of "Cataphoresis." He had excavated sensitive dentine absolutely without pain, which, without its use, were so painful, as scarcely to allow touching. He accomplished this after the application of the battery for

*ten minutes.* He had removed a live nerve painlessly inside of one hour.

*Dr. Bonsall* had succeeded so well with the combined action of chloride and sulphate of zinc, that he had not found a good reason for employing Cataphoresis.

*Dr. Keyser* had found wonderful efficacy in obtunding sensitive dentine in the use of *oil of mustard*.

*Dr. Chupein* relied greatly on dryness. He applied the dam over a number of teeth. If one cavity was too sensitive to work on, he dried this out and applied the chloride or the sulphate of zinc. He had not used these agents combined, but had found the application of the sulphate to cause less pain than the chloride. He let them stay in the painful cavity while he worked on the other cavity. In this way he was able to prepare sensitive cavities with so little discomfort that his patients did not complain.

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### OBITUARY NOTICE.

Dr. Wm. Pepper died on the 28th day of July, 1898, at Pleasonton, California.

It is difficult to estimate the loss which this public-spirited, active, kindly-disposed and brilliant scholar has cast on the community. Wherever the happiness of the masses, the intellectual advancement of his fellow beings could be raised, Dr. Pepper was ever ready with his fortune and his energy to attain these, and many other ends.

We recall the dignity with which he presided, as Provost of the University of Pennsylvania, when conferring the degree of doctor of dental surgery at the annual commencement of the department of dentistry of that institution. As each student received the diploma, and filed off the stage, Dr. Pepper would gracefully bow in reponse to the young doctor's salutation, with the oft-repeated: "Salutem doctor," thereby conferring the degree by word of mouth.

In this way, and in many other ways Dr. Pepper entwined himself around the hearts of all who knew him, making him "Le bien aime de tout."—Ed.

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### SELECTED ARTICLES.

#### NEURECTOMY FOR TIC-DOULOUREUX.

Bernays' "Report of a Surgical Clinic," complimentary to the members of the Mississippi Valley Dental Association, contains the following, in reference to his patient's condition and treatment, before neurectomy for tic-doloureux was decided upon:

"Case V.—The patient, aet. 50, white, female. Family history: Has one sister who suffered from emotional insanity; otherwise the family history is good. Previous health excellent. The present trouble began with a severe neuralgic toothache, localized in the right lower molars. Paroxysms of pain were of daily occurrence, and most severe in the mornings about breakfast time. The pain subsided temporarily whenever the teeth were pressed firmly together or upon any substance held between them, but only to return when the pressure was withdrawn. The presence of anything cold in the mouth immediately produced the most exquisite pain; moderate heat produced a soothing effect. After two months, the pain became continuous, and four molars were extracted without in any way relieving it. On the contrary, the pain increased in severity until October when it ceased entirely for a period of two weeks, and then returned as severely as before. Another tooth was sacrificed, but without relief; the pain became continuous until last June when it again subsided for a period of six weeks. A recurrence then took place together with an involvement of the parts supplied by the second branch of the fifth nerve. Pain has been constant until the operation. She had strenuously avoided the use of narcotics, but during the more active periods of pain, antikamnia in ten grain doses was found to be an efficacious obtunder." After describing the neurectomy, Prof. Bernays says: "Eight weeks have now elapsed since the operation, and no recurrence of the trouble has taken place."

## PAINLESS DENTISTRY.

DR. CLYDE PAYNE, SAN FRANCISCO.

We owe it to our patients to use the means at our hands to make the operations painless. There is no operation in the mouth that cannot be made quite painless. It takes a little more time, but the patient is usually willing to pay for the extra time.

Regarding the formula I use—carbonate of potassium, glycerine cocaine and carbolic acid in a saturated solution—I have had excellent results with it, as have Drs. Younger, Cool, Lewis and others who have used it. It is the next best thing for sensitive dentine to cataphoric medication. Apply the rubber dam, dry out the cavity thoroughly—dry it out with alcohol; place a drop of the obtundent into the cavity and throw a continuous blast of hot air on it, and keep it up for five minutes, when you can excavate quite painlessly.

The basis of nearly all local anesthetics is cocaine. It is a dangerous

drug to use if you do not understand its physiological action; but for hypodermic injections for the painless extraction of teeth, I use the following formula, in which the ingredients are so proportioned that I am yet to have an ill-physiological effect from cocaine: Cocaine, 15 grains; glycerine, 5 drams; nitro-glycerine, 1-10 of a grain; sulphates of morphia and atropia, 1 grain; carbolic acid, 3 drops; and distilled water sufficient to make a two ounce mixture. There is sufficient glycerine to localize the cocaine holding it in apposition to the parts a sufficient length of time to complete the operation, and not very long so that it acts as an irritant and causes a swelling. In patients who have a poor circulation sometimes there is a swelling with this formula, but it will be painless, and will subside as soon as the anesthetic, with which you have infiltrated the tissues, has become absorbed. The nitro-glycerine stimulates the heart just in proportion as the cocaine may depress it. The sulphates of morphia and atropina overcome the after-pain. The carbolic acid keeps the solution.

I will give you an idea of the sterility of this combination. Dr. S. E. Knowles used some that had been standing nine months with a perfect result. The anesthetic figures a 1 1-2 per cent. solution of cocaine.

Many of you are using this formula. I mention it again for the benefit of those who might wish to try it. This is the first time that the formula has been made public property, though I gave it to every one who asked me for it.

Operations of implantation can be made with this formula without pain. Dr. W. J. Younger removed a tumor from the mouth of a patient after I had anesthetized the parts, without pain. The wound healed by first intention.

I had occasion to assist Dr. W. A. Bryant in an operation where surgical means were taken to correct a very pronounced superior protrusion. The four incisors were extracted, four new sockets drilled and the teeth replanted. The operation was painless.

I use it always before adjusting a clamp if the clamp is to impinge on the gum.—*Dental Brief*.

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## A CLINIC ON A FUSIBLE ALLOY.

GRANT MOLYNEAUX, D. D. S., Cincinnati, Ohio.

The increased number and large variety of operations performed in the modern dental office, entailing as they do a considerable amount

of mechanism, compel the busy practitioner to seek the most rapid method for the execution of his work.

The construction of splints, supports for loose teeth under treatment, regulating and retaining appliances, "bridges," crowns, etc., can only be properly executed under the direct supervision of the attending dentist.

If he be a busy man, both time and patience are taxed to the utmost by the cumbersome and lengthy methods generally employed in the execution of the purely mechanical details.

The methods generally employed are to procure an impression either in modeling compound or plaster of paris, followed by the mixing and pouring of a plaster model, varnishing, waxing, sand-moulding for die, counter-die and swaging.

This requires two or more visits of the patient when one visit should suffice.

Rapidity in dental operations is always sought, but any "new method" claiming such virtues is generally approached with fear and trembling, especially by our older brothers.

To allay that fear, I will state that the subject of this clinic has been known to the dental profession for a quarter of a century, and as possessing many virtues, the greatest of which has been overlooked. In advocating this new (?) rapid method we fully appreciate that old adage, "make haste slowly," for rapid methods are only valuable when they are *accurate and perfectly understood* by the operator.

Woods' metal has been used in dentistry for many years, and is known to contain bismuth, cadmium, tin and lead. The alloy before you contains the same ingredients as Woods' metal, the proportions being changed so as to produce an alloy that may be cast into a *modeling compound* or wet plaster of paris impression and give a *smooth, accurate* model or die in metal.

The advantage of being able to cast metal directly with wet plaster or modeling compound can be appreciated by all practitioners of experience, if the model or die be accurate. We feel safe in saying that an alloy composed of five (5) parts of bismuth, three (3) parts of lead, two (2) parts of tin, and two (2) parts of cadmium, properly compounded, will produce, when poured into either of the above named impression materials, a more perfect model than can be obtained by the use of plaster, but a model of this alloy cannot be used in place of plaster in all cases, as in vulcanite or celluloid work, for the fusing point of the metal is about 130°F. It is especially designed for the making of a perfect die and counter-die with the expenditure of not over five

minutes' time, and with the very simplest kind of apparatus. By the use of such an alloy the difficulties of sand-molding are overcome and the production of a perfectly adapted plate is the result. To successfully use this or any low-fusing alloy several points must be constantly observed :

1st. Castings are sharpened and nearest perfect when the alloy is poured close to the congealing point.

2d. Overheating causes a loss of time and deterioration of the alloy.

3d. To make a perfect and smooth casting in modeling compound the impression should be first oiled, and then the alloy is cast in a mush-like consistency, when it will fall in a thick, soft mass into the impression, which is quickly jarred on the table, cooled in water and separated. A little practice will enable the operator to produce a perfect model in every instance.

4th. Take a plaster impression directly from the mouth, soak it thoroughly with sperm oil, and pour the alloy at a little higher temperature than for modeling compound and let it stand until cold.

5th. In order to obtain a thick base for the model take a thin copper strip (in lieu of this a strip of heavy writing paper) about ten or twelve inches long and two inches wide, wrap around the impression and hold in place by snapping over it a small rubber band. Fill in spaces between band and impression with soft putty, which will always be ready for use by being kept under water. [A half-pound screw top vaseline jar half filled with soft putty and covered with water will keep quite soft for years.]

6th. To make counter-die, wrap the copper strip around the base of the die and fill all undercuts and unnecessary parts with the putty, paint over the surface with whiting dissolved in water or alcohol and cast the alloy as cold as possible.

7th. Before rendering castings, they should be cleaned of all putty and other dirt.

If, however, the metal becomes contaminated, it can be cleaned by heating until it becomes perfectly fluid, when the impurities can be removed with a piece of blotting paper. One illustration of the use of this alloy may be suggestive of its many valuable applications.

In adapting a gold or platinum base for full dentures where the recession over the tuberosities and anterior ridge is so great as to make sand molding without a core absolutely impossible, make the model or die of fusible alloy by casting into the impression. For

such a case always use plaster, as this can be broken off in such a manner as to be restored and a second die cast.

Upon this second the relief or vacuum chamber, made of block tin, can be attached with thick shellac varnish, or the relief can be first trimmed out of the impression.

Use the second die for the first stamping of the plate, making the adaption to the undercut as close as possible with riveting hammer.

Try the plate in the mouth and properly trim and wire if necessary.

Replace on the used die and wrap the plate and die with one covering of cheese-cloth or thin paper, place in the Parker shot-swaging device and swage.

The plate cannot be removed from the die, but by placing the same in hot water the metal will run out of the plate, leaving it unchanged in shape.

It can now be polished, and after transferring the relief from the old die to the unused one, the plate is sprung onto it and swaging with shot and melting the metal out as before will leave the plate with an adaption that cannot be procured by any other method. In taking an impression for metal castings, it should be a little thicker than usual, and any number of dies can be made from the same impression, all of which will be alike.

The compounding of this alloy requires the greatest of care in protecting it from the action of the air during the first melting and in the manner of adding the metals. As it never again approaches the first heat except by carelessness, the metal will remain permanent in composition and working qualities indefinitely.

The necessary expense of this alloy, which at first may seem unreasonable, will be saved in the saving of time in one difficult case.

After two years of constant use of this metal, I can positively state that it will meet all the claims of this clinic.—*Ohio Dental Journal*.

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## PRACTICAL PLACE.

### ALUM FOR PREVENTION OF TARTAR.

Surprises are constantly occurring. We have always thought that alum in any quantity was injurious to teeth. Now comes Dr. C. N. Pierce, who says he has been using a solution of alum to prevent the accumulation of tartar; over a dozen patients have tried it, and he has been surprised at the excellent results. He tells them to take a glass of water with a pinch of alum in it, and rinse the mouth freely

once a day. It is harmless, he says, to the teeth, and has kept the gums in good condition, where previously there was a heavy accumulation every month or six weeks.

Dr. Leffman, a chemist, was called on to answer about the injurious effects on the teeth. In the same journal (*International Dental Journal*) he says he does not think alum would produce any corrosion. It is not an active corrosive agent. He should therefore not expect much corrosion from the alum. If the quantity were large, it might have an astringent action on the gums. He feels that the experiment would probably show very little, if any, corrosion of the teeth proper. Alum is not like a free acid. It has the properties of an acid, but simply because there is a want of balance between the alumina and sulphuric acid. It shows the properties of an acid to litmus-paper and to our taste. But there is as much neutralizing material in it as in baking soda. We are apt to think that alum is an acid substance, when in reality it is merely a substance with an acid reaction.

The chemist's answer is a little equivocal.—*American Dental Weekly*.

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#### USES OF BORAX.

We have reported before that an addition of borax to the starch or flour will enhance the adhesive quality of paste fifty per cent.; borax also has an antiseptic action, and a slight admixture of it will prevent the paste from souring. For aquarelle painting, a varnish soluble in water may be prepared from five parts of shellac and one part borax, which is to be used for binder instead of glue.

With caseine, which is freshly precipitated from milk by the use of acetic acid, a liquid of thickish consistency is obtained by dissolving same in a concentrated borax solution. The substance possesses great gluing qualities, and, when mixed with lime, furnishes very permanent colors.

Finally, borax plays an important part in soldering, as it removes the oxide generated by the hot soldering tool from the solder, zinc or hard solder, thus assisting the soldering. In smearing up an iron stove with loam, a much more durable material is obtained by mixing four parts of loam with one part borax.—*Condensed from the German Illustrierte Maler Kalender for 1898.*

# GENERAL INDEX FOR VOL. XII, 1898.

| A  | PAGE.         |
|--|---------------|
| All-Plaster Articulating Models vs. Brass Articulators | 14            |
| A Right Hand Glove                                     | 17            |
| Articulating Teeth                                     | 20, 28        |
| Amalgam Question. The                                  | 23            |
| A New Cleansing Fluid                                  | 26            |
| Anæsthesia. Infiltration                               | 27            |
| A Filling Polisher                                     | 28            |
| Administration of Ether for Anæsthesia                 | 30            |
| A Good Soldering Block                                 | 41            |
| A Simple Way of Making a Gold Crown for Certain Cases  | 43            |
| Amalgam  | 45            |
| A Word of Warning                                      | 55            |
| A Useful Flux  | 60            |
| Artificial Respiration. New Method of                  | 61            |
| Aluminum. To Polish                                    | 62            |
| An Electrical Haemostat                                | 62            |
| Anæsthesia. Cocaine                                    | 63            |
| A New Local Anæsthetic                                 | 64            |
| A New Method of Polishing Vulcanite Plates             | 64            |
| A New Method of Banding Logan Crowns                   | 64            |
| A Counter Irritant                                     | 89            |
| After Pains of Extraction                              | 89, 91, 96    |
| A Substitute for Gold for Dental Plates                | 91            |
| Aromatic Sulphuric Acid                                | 91            |
| An Efficient Deodorizer                                | 91            |
| A Useful Modelling Compound                            | 94            |
| Aluminized Gutta Percha                                | 96            |
| Aluminum Crowns  | 159, 160, 106 |
| Aconite  | 117           |
| Ammonol  | 118           |
| An Allayer of Pain, An Antiseptic and Local Anæsthetic | 121           |
| An Interesting Case                                    | 124           |
| A Clinic on Fusible Metal                              | 188           |
| Aium for Preventing Tartar                             | 191           |
| Athletics vs. Fresh Air                                | 125           |

| B  | PAGE.                      |
|--|----------------------------|
| Brass Articulators vs. All-Plaster Articulating Models | 14                         |
| Base Wax. How to Make                                  | 15                         |
| Book Notices   | 25, 88, 109, 110, 155, 156 |
| Bee Sting  | 62                         |
| Bandings Logan Crowns. A New Method of                 | 64                         |
| Blood Stains   | 92                         |
| Birmingham Dental College                              | 108                        |
| Breathe Properly                                       | 119                        |
| Borax. Uses of   | 192                        |

| C   | PAGE.          |
|---|----------------|
| Crown and Bridge Work. The Construction of          | 1, 33, 97, 161 |
| Cleansing Fluid. A New                              | 26             |
| Cement Fillings. For the Protection of              | 27             |
| Carbolic Acid. Danger in                            | 29             |
| Chronic Gastritis                                   | 31             |
| Cure for Fetid Breath                               | 32             |
| Chloride of Ethel Spray Haemostat                   | 62             |
| Cleansing Paste for the Hands                       | 63             |
| Castor Oil Externally                               | 63             |
| Cocaine Anæsthesia                                  | 63             |
| Cold in the Head. Gelsemium for                     | 63             |
| Conservation of Tooth Tissue in Preparing Cavities  | 70             |
| Cleaning Clothing                                   | 88             |
| Counter Irritant. A                                 | 89             |
| Cementing Bands to Crowns                           | 90             |
| Cataphoresis  | 90             |
| Covering for Slight Wounds                          | 90             |
| Conserving the Pulp. Diagnosis for                  | 94             |
| Character in Walking                                | 95             |
| Crowns. Aluminum                                    | 106, 159, 160  |
| Clasp Plates  | 107            |
| Chicago Dental Society                              | 108            |
| Canabis Indica                                      | 116            |
| Corns. Remedy for                                   | 128            |
| Contour Amalgam Fillings. Matrices, How to Make for | 174            |

| D  | PAGE.           |
|--|-----------------|
| Dental Students. Leading Questions and Answers for | 8, 46, 148, 178 |
| Dental Alloys and Cements. Making                  | 17              |
| Discoloration of Tooth from Arsenical Preparations | 22              |
| Directions for Eucaine Hydrochlorate B.            | 30              |
| Dam and Matrix. Modelling Compound                 | 61              |
| Dental Inspection of Schools                       | 90              |
| Dental Plates. A Substitute for Gold, for          | 91              |
| Deodorizer. An Efficient                           | 91              |
| Diagnosis for Conserving the Pulp                  | 94              |
| Danger in Fruit                                    | 96              |
| Dental Association. The National                   | 109             |
| Dental Department of the University of Buffalo     | 109             |
| Discovery of Sal Ammoniac                          | 124             |
| Dental Educators                                   | 125             |
| Dirty Burs. Receptacle for                         | 126             |
| Difficult Partial Impressions                      | 127             |
| Danger in Carbolic Acid                            | 29              |

| E                                       | PAGE.      |
|---|------------|
| Ether for Anæsthesia. Administration of | 30         |
| Eucaine Hydrochlorate B. Directions for | 30         |
| External Use of Castor Oil              | 63         |
| Extraction. After Pains of              | 89, 91, 96 |
| Ergot                                   | 116        |
| Eucaine                                 | 116        |
| Eucalyptus Tooth Paste                  | 127        |

| F  | PAGE. |
|--|-------|
| For the Protection of Cement Fillings  | 27    |
| Formaldehyde   | 30    |
| Fetid Breath. Cure for   | 32    |
| Flux. A Useful   | 60    |
| Fowler's Solution as an Obtundent  | 60    |
| Formalin Cement Root Canal Filling   | 61    |
| Fistulous Openings to Force Medicaments Through                                | 63    |
| Filling Material. The Choice of a  | 81    |
| Formalin in Dentistry  | 92    |
| Formaldehyde in Connection with the Essence of Geranium in Dental Therapeutics | 111   |
| Fresh Air vs. Athletics  | 125   |
| For Sensitive Dentine  | 125   |
| Fouchard. Peter  | 129   |

| G   | PAGE. |
|---|-------|
| Gastritis. Chronic                                    | 31    |
| Gold Crowns. A Simple Way of Making for Certain Cases | 43    |
| Gelsemium for Cold in the Head                        | 63    |
| Gutta Percha. Aluminized                              | 96    |
| Gold Solution. How to Make                            | 102   |

| H  | PAGE. |
|--|-------|
| How to Purify Wax and Make Base Plate Wax                        | 15    |
| Hydranaphthol in the Treatment of the Dental Pulp, Dead or Alive | 57    |
| Haemostat. Chloride of Ethel Spray                               | 62    |
| Haemostatic Mixture  | 62    |
| How to Make Silver Solution                                      | 101   |
| How to Make Gold Solution  | 102   |
| How to Separate a Vulcanite Flask                                | 108   |
| How One Manicure Reads the Nails                                 | 125   |
| How to Take Impression of the Mouth with Undercut Teeth          | 126   |

| I   | PAGE. |
|---|-------|
| Impressions of Modelling Compound           | 22    |
| Infiltration Anæsthesia                     | 27    |
| Inflammation of the Gums. Massage in        | 27    |
| Investing Material                          | 29    |
| Ingot Moulds                                | 30    |
| Impression Materials and Taking Impressions | 65    |

# GENERAL INDEX FOR VOL. XII.

|   | PAGE. |
|---|-------|
| Ivy Poisoning. Relief from . . . . .    | 89    |
| Inspection of Schools. Dental . . . . . | 90    |
| Iodide Potass. . . . .                  | 118   |
| Ignorance . . . . .                     | 127   |

|   |                 |
|---|-----------------|
| <b>L</b>  |                 |
| Leading Questions and Answers for Dental Students . . . . . | 8, 46, 148, 178 |
| Libby Method. The . . . . .                                 | 23              |
| Laboratory Hints . . . . .                                  | 27              |
| Liquid Air. . . . .   | 59              |
| Local Anaesthesia. Warm Solution for . . . . .              | 62              |
| Logan Crowns. A New Method of Landing . . . . .             | 64              |
| Lining for Sensitive Cavities . . . . .                     | 91              |
| Lithium . . . . .   | 118             |

|  |     |
|--|-----|
| <b>M</b>                                       |     |
| Making Dental Alloys and Cements . . . . .     | 17  |
| Modelling Compound. Impressions of . . . . .   | 22  |
| Massage in Inflammation of the Gums . . . . .  | 27  |
| Models and Impressions. To Duplicate . . . . . | 61  |
| Modelling Compound Dam and Matrix . . . . .    | 61  |
| Mad Dog Bite . . . . .                         | 89  |
| Modelling Compound. A Useful . . . . .         | 94  |
| Metaphysics . . . . .                          | 103 |
| Mercury . . . . .                              | 118 |
| Mixing Alloys . . . . .                        | 123 |
| Muscles of Expression . . . . .                | 177 |

|  |     |
|--|-----|
| <b>N</b>                                       |     |
| Nitrous Oxide Gas . . . . .                    | 24  |
| New Method of Artificial Respiration . . . . . | 61  |
| Neurectomy for Tic-Douloureux . . . . .        | 186 |

|  |             |
|--|-------------|
| <b>O</b>                                     |             |
| Oxychloride of Zinc Cement . . . . .         | 16          |
| Obituary Notices . . . . .                   | 26, 87, 186 |
| Our Local Societies . . . . .                | 38          |
| Obtundents . . . . .                         | 45          |
| Odontographic Society . . . . .              | 52          |
| Obtundent. Fowler's Solution as an . . . . . | 66          |
| Observation . . . . .                        | 104         |
| Opium . . . . .                              | 117         |

|  |     |
|--|-----|
| <b>P</b>   |     |
| Pulp Canals. Sterilizing Putrescent Contents of . . . . .        | 28  |
| Pyorrhoea. Treatment for . . . . .                               | 29  |
| Painless Removal of Pulp . . . . .                               | 60  |
| Polish Aluminium. To . . . . .                                   | 62  |
| Preparing Cavities. Conservation of . . . . .                    | 70  |
| Tooth Tissue in . . . . .  | 85  |
| Point of Contact . . . . .                                       | 89  |
| Pulpitis. Treatment of . . . . .                                 | 90  |
| Prevention of Tartar . . . . .                                   | 93  |
| Passage of False Teeth. Vienna Treatment for Effecting . . . . . | 112 |
| Pyrozone. Uses of . . . . .                                      | 117 |
| Papine . . . . .   | 118 |
| Potass. Iodine . . . . .   | 127 |
| Partial Impressions Difficult . . . . .                          | 129 |
| Peter Fauchard . . . . .   | 187 |
| Painless Dentistry . . . . .                                     | 191 |
| Prevention of Tartar. Alum for the . . . . .                     | 191 |

|   |         |
|---|---------|
| <b>R</b>  |         |
| Rubber. To Harden . . . . .                             | 27      |
| Report of the Penna. Assn. of Dental Surgeons . . . . . | 44, 184 |
| Removing Pulp Painlessly . . . . .                      | 60      |
| Root Canal Filling. Formalin Cement . . . . .           | 61      |
| Relief from Ivy Poisoning . . . . .                     | 89      |
| Removal of Devitalized Pulp from Root Canal . . . . .   | 89      |
| Root Treatment. Silico Fluoride of Mercury . . . . .    | 89      |
| Root Perforation . . . . .                              | 94      |
| Rubber Dam. To Apply the . . . . .                      | 107     |
| Receptacle for Dirty Burs . . . . .                     | 126     |
| Remedy for Corns . . . . .                              | 128     |

|   |     |
|---|-----|
| <b>R</b>  |     |
| Reminiscences . . . . .                                 | 130 |
| Report of the New Jersey State Dental Society . . . . . | 144 |

|  |        |
|--|--------|
| <b>S</b>   |        |
| Sticky Wax. To Make . . . . .                        | 28     |
| Sterilizing Putrid Contents of Pulp Canals . . . . . | 41     |
| Soldering Block. A Good . . . . .                    | 45     |
| Solid Gold Cusps . . . . .                           | 62     |
| Sting. Bee . . . . .                                 | 89     |
| Silico-Fluoride of Mercury. Root Treatment . . . . . | 91     |
| Sensitive Cavities. Lining for . . . . .             | 92, 95 |
| Separating Model from Impression . . . . .           | 92     |
| Stains. Blood . . . . .                              | 101    |
| Silver Solution. How to Make . . . . .               | 113    |
| Silver Salts. Their Uses in Dentistry . . . . .      | 122    |
| Silver Nitrate in Superficial Decay . . . . .        | 123    |
| Sticking Stoppers . . . . .                          | 124    |
| Suction Cavities . . . . .                           | 125    |
| Sensitive Dentine . . . . .                          | 126    |
| Strop for Burnishers, Spatula, etc. . . . .          | 126    |
| Shock . . . . .                                      | 126    |

|  |                |
|--|----------------|
| <b>T</b>   |                |
| The Construction of Crown and Bridge Work . . . . .  | 1, 33, 97, 161 |
| Troublesome Cases . . . . .  | 12             |
| Tooth Discoloration from Arsenical Preparations . . . . .  | 22             |
| The Libby Method . . . . .   | 23             |
| The Amalgam Question . . . . .   | 23, 109        |
| To Harden Rubber . . . . .   | 27             |
| To Keep Solder in Place . . . . .  | 27             |
| To Make Sticky Wax . . . . .   | 28             |
| To Prevent Plaster Adhering to Rubber Plates . . . . .   | 28             |
| To Duplicate Models and Impressions . . . . .  | 28             |
| To Harden Plaster Boil in Paraffine . . . . .  | 28             |
| Treatment for Pyorrhoea . . . . .  | 29             |
| Tooth Washes . . . . .   | 31             |
| To Polish Aluminium . . . . .  | 62             |
| The Hands. Cleansing Paste for . . . . .   | 63             |
| To Force Medicaments Through Dead Teeth with Fistulous Openings . . . . .                              | 63             |
| Taking Impressions and Impression Materials . . . . .  | 65             |
| The Digestive Organs . . . . .   | 75             |
| The Choice of Filling Materials . . . . .  | 81             |
| Treatment of Pulpitis . . . . .  | 89             |
| Tartar. Prevention of . . . . .  | 90             |
| To Prevent Weeping Gums . . . . .  | 92             |
| To Apply the Rubber Dam . . . . .  | 107            |
| The National Dental Association . . . . .  | 109            |
| To Control Hemorrhage at Apex of Root after Pulp Removal . . . . .                                     | 124            |
| Tooth Paste . . . . .  | 127            |
| Trying and Wishing . . . . .   | 127            |
| The Folly of Private Interpretation . . . . .  | 127            |
| Timid Children . . . . .   | 157            |
| The Importance of Establishing a Technique as Well as Literary Standard for College Entrance . . . . . | 169            |
| Tic-Douloureux. Neurectomy for . . . . .   | 186            |

|   |     |
|---|-----|
| <b>U</b>                                    |     |
| Useful Modelling Compound. A . . . . .      | 94  |
| Uses of Pyrozone . . . . .                  | 112 |
| Uses of Silver Salts in Dentistry . . . . . | 113 |
| Uses of Borax . . . . .                     | 192 |

|  |    |
|--|----|
| <b>V</b>   |    |
| Vulcanite Plates. A New Method of Polishing . . . . .          | 64 |
| Vienna Treatment in Effecting Passage of False Teeth . . . . . | 93 |

|   |     |
|---|-----|
| <b>W</b>                                      |     |
| Wax. How to Purify . . . . .                  | 15  |
| Warm Solution for Local Anaesthesia . . . . . | 62  |
| Weeping Gums. To Prevent . . . . .            | 92  |
| Walking Erect . . . . .                       | 119 |
| Wishing and Trying . . . . .                  | 127 |







